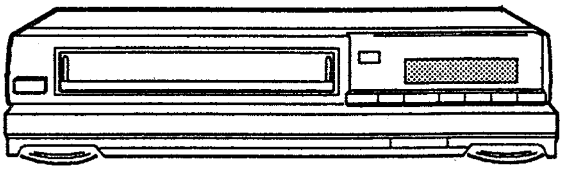
S/M Code No.91 – 069 DATE OF ISSUE 5/1992 – I

AIWA®

SERVICE MANUAL

HV-G70SH/ DH/SE
HV-DK915KE



VIDEO CASSETTE RECORDER

- BASIC VIDEO MECHANISM : TN – 5900
- TYPE. SH,DH,SE (G70)
  KE (DK915)

SPECIFICATIONS

Recording/playback system
- Video : Rotary 2 head helical scaning
- Audio : Fixed head

Video signal
- PAL/MESECAM color signal 625 lines, 50 Fields

Recording/playback time
- 4 hours max. with E-240 tape, standard speed

Fast forward/rewind time
- less than 300 sec., with E-180 tape

Tape speed
- Standard speed, 23.39 mm/sec.

Tape width
- 12.65 mm

Usable cassette
- VHS video cassette

Timer Display
- 24-hour cycle, day, hour, minute,
  digital fluorescent display

Timer recording
- 7 programs within 2 weeks
- 1 program for weekly recording

Channel coverage
- G70SH
  - VHF : I1 – E4 and E5 – E12 channels
  - UHF : 21 – 69 channels
- G70DH
  - VHF : C1 – C5 and C6 – C12 channels
  - UHF : C13 – C57 channels (PAL K)
    B21 – B68 channels (PAL I)
- G70SE
  - VHF : I1 – E4, E5 – E12 channels
  - UHF : 21 – 69 channels
- DK915KE
  - B and G color TV system
    - VHF : E2 – E4 and E5 – E12 channels
    - UHF : 21 – 69 channels
  - D and K color TV system
    - VHF : R1 – R5 and R6 – R12 channels
    - UHF : 21 – 69 channels

RF output
- UHF channel between 30 and 39

RF output level
- 75 dB

Video input
- 0.5 – 2.0 Vp-p, 75 ohms unbalanced

Video output
- 1.0 Vp-p, 75 ohms unbalanced

Horizontal resolution
- 240 lines (nominal)

Video S/N(luminance)
- 43 dB (nominal)

Audio input
- – 10 dBs (nominal)

Audio output
- – 8 dBs, 2.2 k ohms

Audio frequency response
- 200 Hz – 8 kHz

Audio S/N
- 41 dB (nominal)

Operating temperature
- 5 ℃ – 40 ℃

Power requirements
- 220 V AC, 50 Hz

Auto voltage type
- 110V~240V 50/60Hz

Power consumption
- 21 watts (Use to power unit 1)
- 26 watts (Use to power unit 2)

Dimensions
- 380(W) × 96(H) × 325(D) mm
- (15(W) × 3 ⅞ (H) × 12 ⅞ (D) inches)

Weight
- Approx. 5.1 (12.1 lbs) kg (Use to power unit 1)
- Approx. 5.5 (12.1 lbs) kg (Use to power unit 2)

● Design and specifications are subject to change without notice.

AIWA Co., Ltd. Tokyo Japan

Printed in Japan

TABLE OF CONTENTS

■ STANDARD MAINTENANCE 4
  1. SERVICE SCHEDULE OF COMPONENT 4
  2. CLEANING 4

■ SERVICE JIG AND TOOLS 5~6
  1. SERVICE JIG AND TOOLS 5
  2. HOW TO ASSEMBLE THE JIGS 6

■ DISASSEMBLY INSTRUCTIONS 7~19

■ ELECTRICAL MAIN PARTS LIST 20~24

■ BLOCK DIAGRAM 25~35
  · BLOCK DIAGRAM – 1 (VIDEO SECTION) 25~26
  · BLOCK DIAGRAM – 2 (SERVO/SYSCON SECTION) 27~28
  · BLOCK DIAGRAM – 3 (SYSTEM CONTROL SECTION) 29~30
  · BLOCK DIAGRAM – 4 (TUNER SECTION) 31~32
  · BLOCK DIAGRAM – 5 (AUDIO SECTION) 33
  · BLOCK DIAGRAM – 6 (POWER UNIT – 1 SECTION) 34
  · BLOCK DIAGRAM – 7 (POWER UNIT – 2 SECTION) 35

■ PRACTICAL SERVICE FIGURE 36

■ TRANSISTOR ILLUSTRATION 36

■ WIRE HARNESS DIAGRAM 37~38

■ WIRING – 1 (VIDEO/TUNER/SERVO/SYSTEM CONTROL SECTION) 39~40

■ SCHEMATIC DIAGRAM – 1 (VIDEO SECTION) 41~43

■ WAVE FORM – 1 (SERVO WAVE FORM) 44~45

■ DURM SERVO SYSTEM TIMING CHART 45~46

■ SCHEMATIC DIAGRAM – 2 (SERVO/SYSTEM CONTROL SECTION) 47~49

■ IC BLOCK DIAGRAM – 1 50
  ● IC, LVA522S/IC, SBX1610

■ IC BLOCK DIAGRAM – 2 51
  ● IC, MSM16811/IC, LA7910/IC, PQ09R05

■ WAVE FORM – 2 (AUDIO WAVE FORM) 52~54

■ SCHEMATIC DIAGRAM – 3 (TUNER SECTION) 55~56

■ WAVE FORM – 3 (TUNER WAVE FORM) 57~58

■ WIRING – 2 (POWER UNIIT – 1/PRE AMP./AUDIO/MECHANISM SECTION) 59~60

■ SCHEMATIC DIAGRAM – 4 (PRE AMP./AUDIO SECTION) 61~62

■ SCHEMATIC DIAGRAM – 5 (POWER UNIT – 1 SECTION) 63~64

■ SYSTEM SWITCH MODE 65

■ WAVE FORM – 4 (POWER UNIT – 1 WAVE FORM) 66~68
  (TIMER WAVE FORM) 68~69

■ WAVE FORM – 5 (VIDEO WAVE FORM) 70~74

■ WIRING – 3 (POWER UNIT – 2／PRE AMP.／AUDIO／MECHANISM SECTION) ······ 75~76

■ SCHEMATIC DIAGRAM – 6 (PRE AMP. SECTION) ······ 77~78

■ SCHEMATIC DIAGRAM – 7 (AUDIO SECTION) ······ 79~80

■ SCHEMATIC DIAGRAM – 8 (POWER UNIT – 2 SECTION) ······ 81~82

■ WIRING – 4 (TIMER SECTION) ······ 83~84

■ SCHEMATIC DIAGRAM – 9 (TIMER SECTION) ······ 85~86

■ IC DESCRIPTION ······ 87~92
1. IC, MB88525 – 205M (IC201) ······ 87~89
2. IC, μ PD75208CW – A83 (IC901) ······ 89~90
3. IC, MN67481P (IC203) ······ 91
4. IC, μ PD1730CT (IC881) ······ 92

■ ELECTRICAL ADJUSTMENT ······ 93~96
1. POWER VOLTAGE ADJUSTMENT ······ 93
2. SERVO CIRCUIT ADJUSTMENT ······ 94
    (1) TRACKING ADJUSTMENT ······ 94
    (2) SWITCHING POSITION ADJUSTMENT ······ 94
3. TUNER SECTION ADJUSTMENT ······ 95
    (1) REG 9V VOLTAGE ADJUSTMENT ······ 95
4. VIDEO CIRCUIT ADJUSTMENT ······ 95
    (1) PB Y – FM LEVEL ADJUSTMENT ······ 95
    (2) DOC LEVEL ADJUSTMENT ······ 95
    (3) AGC ADJUSTMENT ······ 96
    (4) Y – FM CARRIER FREQUENCY ADJUSTMENT ······ 96
    (5) Y – FM DEVIATION ADJUSTMENT ······ 96
    (6) REC Y – FM LEVEL ADJUSTMENT ······ 96
    (7) CHROMA RECORDING CURRENT ADJUSTMENT ······ 96

■ MECHANICAL ADJUSTMENT ······ 97~106
1. TAPE TRANSPORT ADJUSTMENT FLOWCHART ······ 97
2. TAPE RUNNING POSITION ADJUSTMENT ······ 98~100
3. AUDIO CONTROL HEAD ADJUSTMENT ······ 101
4. X VALUE ADJUSTMENT ······ 102
5. ENVELOPE WAVE FORM ADJUSTMENT ······ 103~104
6. AUDIO CONTROL HEAD HEIGHT／AUDIO CONTROL HEAD TILT ADJUSTMENT ······ 105
7. AUDIO CONTROL HEAD AZIMUTH ADJUSTMENT ······ 106

■ EXPLODED VIEW, MECHANICAL PARTS LIST ······ 107~118
- EXPLODED VIEW – 1 ······ 107~108
- EXPLODED VIEW – 2 ······ 109
- EXPLODED VIEW – 3 ······ 110~111
- EXPLODED VIEW – 4 ······ 112~113
- EXPLODED VIEW – 5 ······ 114
- EXPLODED VIEW – 6 ······ 115
- EXPLODED VIEW – 7 ······ 116
- EXPLODED VIEW – 8 ······ 117~118

■ ACCESSORIES／PACKAGE LIST ······ 119

STANDARD MAINTENANCE

1.SERVICE SCHEDULE OF COMPONENT

○ : Check ● : Change

DECK		Periodic Service Schedule			
Ref. No.	Parts Name	1000 h	2000 h	3000 h	4000 h
2-2	UPPER DRUM	○	●	○	●
.4-6	PINCH ROLLER A		●		●
3-32	CAPSTAN MOTOR ASSY		●		●
5-27	CLUTCH ASSY		●		●
4-46	LM ASSY			●	
6-22	MAIN BELT		●		●
3-5	BT BAND ASSY		●		●
5-29	DRIVE BELT		●		●
4-41	BRAKE SHOE		●		●
6-1	LOADING BELT		●		●
5-26	FL BELT		●		●
2-5	DRUM EARTH			●	
4-21	ACE HEAD HV225211			●	
3-25	REEL ASSY			●	
4-50	FULL ERASE HEAD			●	

NOTE :

1. Clean all parts for the tape transport.
   Upper Drum with video head/Pinch Roller A/ACE Head/Full Erase Head
2. After cleaning up the parts, perform all DECK ADJUSTMENT.

2.CLEANING

1. Cleaning of "Video Head" (See Figure－1)
   Head cleaning by using a chamois skin.

   － Procedure －
   1) Remove the "Cabinet, Steel".
   2) Put on a glove (thin type) to avoid touching the "Upper Drum"and "Lower Drum"with bare hand.
   3) Put a few drops of alcohol on the chamois skin, and by slightly placing it against the "Head Tip", allow the "Upper Drum"to turn the right and left.

   － Remark －
   1) The video head is of very hard material, but since it is very thin, avoid cleaning it vertically.
   2) Wait for the cleaned part to dry out, before operating the unit.
   3) Do not reuse stained chamois skin.

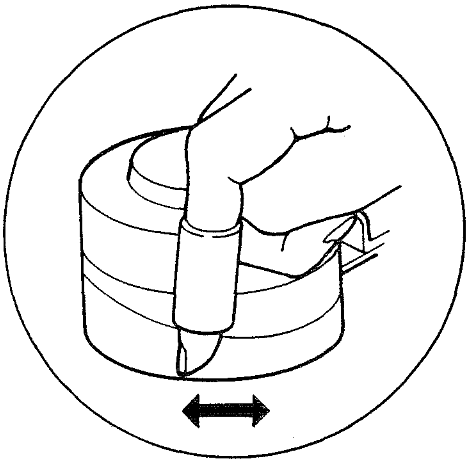


Fig.-1

2. Cleaning of "ACE Head" (See Figure－2)
   Head cleaning by using a chamois skin.

   － Procedure －
   1) Remove the "Cabinet, Steel".
   2) Put a few drops of alcohol on the chamois skin, clean up the "Audio Control Head", being careful not to damage the "Upper Drum" and other tape running parts.

   － Remark －
   1) Avoid cleaning "ACE Head" vertically.
   2) Wait for the cleaned part to dry well, before operating the unit.

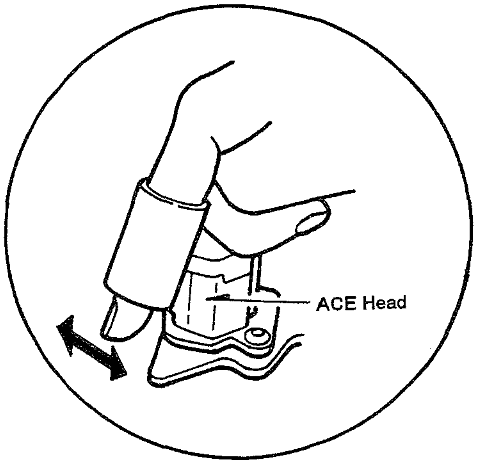


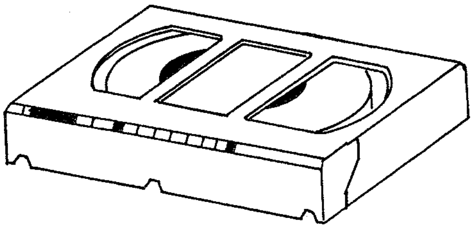
Fig.-2

SERVICE JIG AND TOOLS

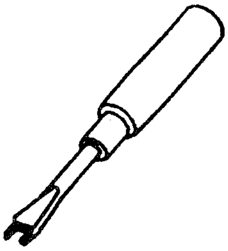
1.SERVICE JIG AND TOOLS

Ref. No.	Name	Adjustment
J-1	Torque Meter (FSJ-VHT-063)	Back Tension
J-2	Special Driver (SMALL)	Tape Running Position, Envelope Wave Form
J-3	Special Driver(LARGE)	X Value
J-4	Mirror	Tape Transportation Check
J-5	Alignment Tape (TTV-P2)	X Value, Envelope Wave Form, ACE Head Azimuth
J-6	Alignment Tape (TTV-P1)	ACE Head Height / ACE Head Tilt
J-7	Box Driver M3	Tape Running Position, X Value, Envelope Wave Form
J-8	EXT. PCB. KIT (A) 〔Parts No. 09-054-012-010〕	HA (For repair of circuit board)

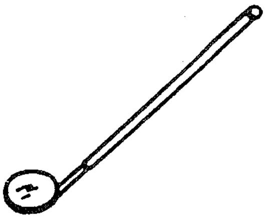
J-1, J-5, J-6



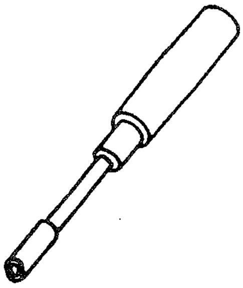
J-2, J-3



J-4



J-7



2.HOW TO ASSEMBLE THE JIGS

1. Assembling the J－8 (See Figure－1)

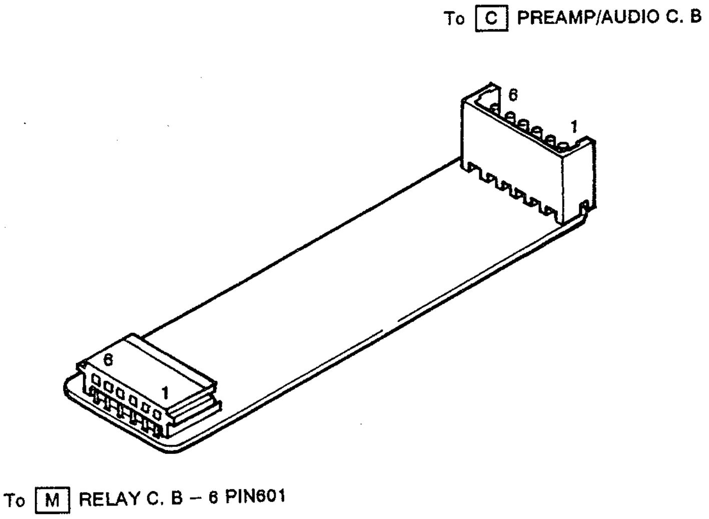

To C PREAMP/AUDIO C. B
6
1
6
1
To M RELAY C. B－6 PIN601

Fig.-1

Place the circuit board with the solder side down as shown in the figure above and assemble the connectors, taking care of their directions.

2. Using the J－8 (See Figure－1)

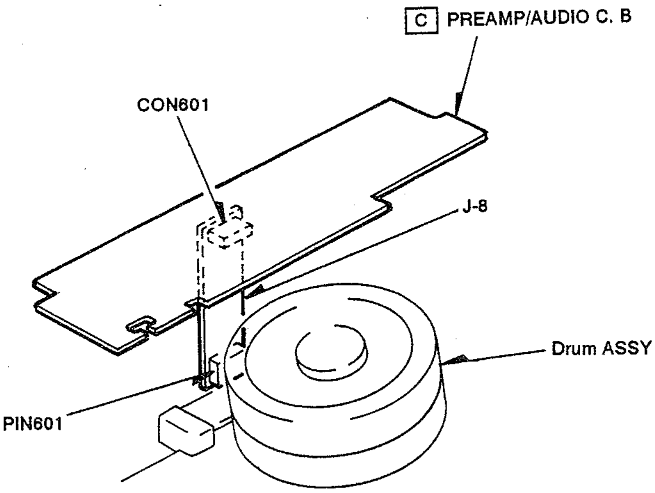

C PREAMP/AUDIO C. B
CON601
J-8
Drum ASSY
PIN601

Fig.-1

Use this jig when servicing the "Preamp／Audio C. B".

DISASSEMBLY INSTRUCTIONS

1. "Cabinet Front ASSY" Removal (See Figure – 1)
   1) Remove 4 screws Ⓐ holding the "Cabinet, Steel".
   2) Remove 8 screws Ⓑ holding the "Plate, Bottom".
   3) Remove 3 screws Ⓒ and releases 5 hooks to remove the "Cabinet Front ASSY" in the direction of the arrow.

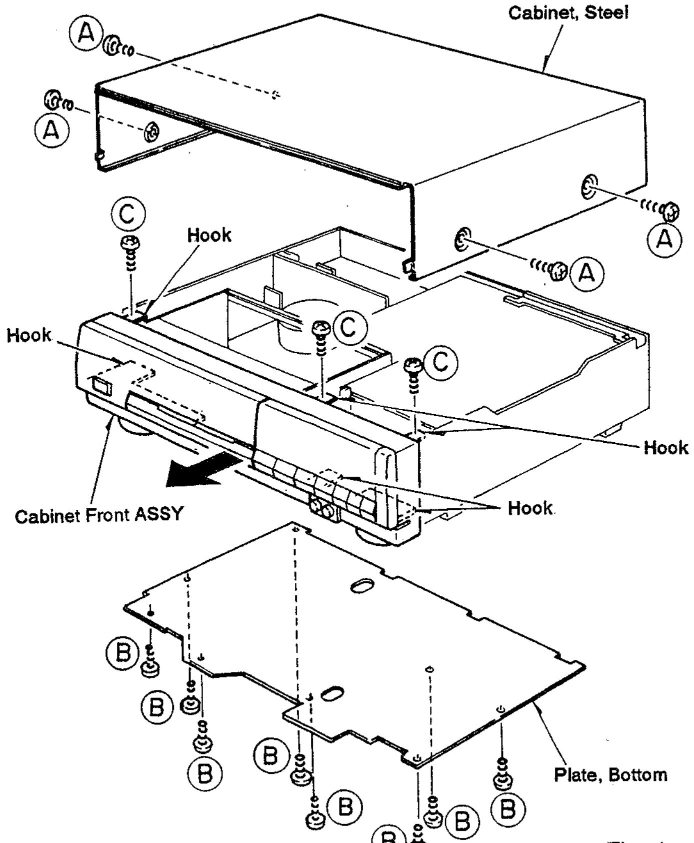

Cabinet, Steel
Ⓐ
Ⓐ
Ⓐ
Ⓐ
Ⓒ
Hook
Hook
Ⓒ
Ⓒ
Hook
Hook
Cabinet Front ASSY
Ⓑ
Ⓑ
Ⓑ
Ⓑ
Ⓑ
Ⓑ
Ⓑ
Ⓑ
Plate, Bottom

Fig.-1

2. " Power Unit ASSY"and "Main C. B" Removal (See Figure – 2)
   1) Remove 5 screws Ⓐ holding the "Main C. B".
   2) Remove 2 screws Ⓑ and 2 screws Ⓒ holding the "Power Unit ASSY".

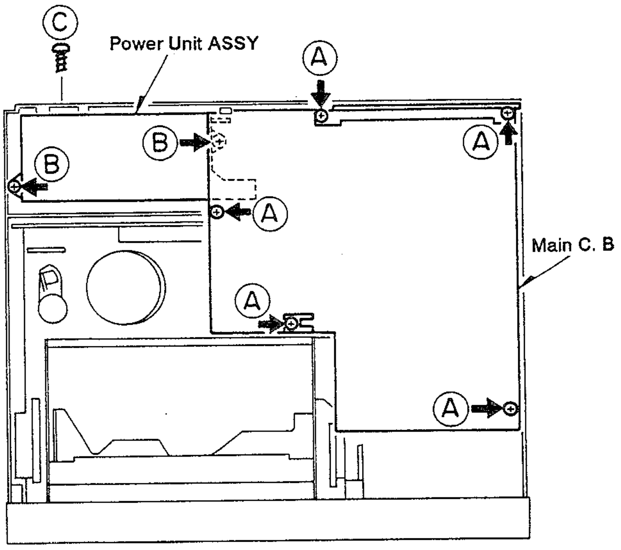

Ⓒ
Power Unit ASSY
Ⓐ
Ⓐ
Ⓑ
Ⓑ
Ⓐ
Main C. B
Ⓐ
Ⓐ

Fig.-2

3. "Mechanism ASSY" Removal (See Figure – 3)
   1) Remove screw Ⓐ and disconnect the connector to remove the "Preamp/Audio C. B" in the direction of the arrow.
   2) Remove 3 screws Ⓑ holding the "Mechanism ASSY".

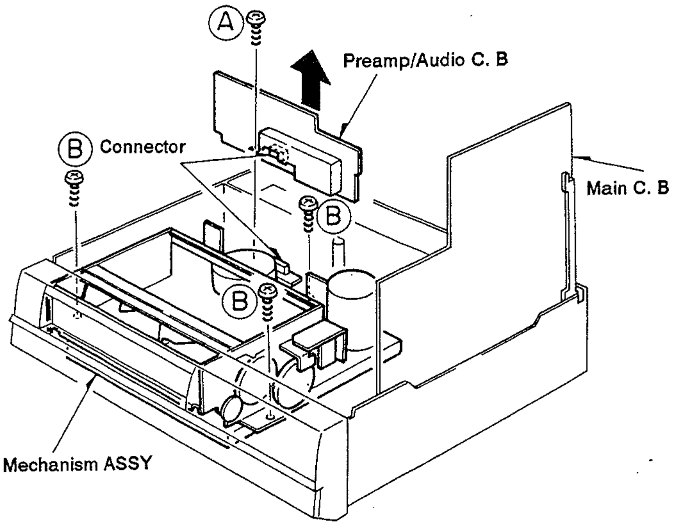

Ⓐ
Preamp/Audio C. B
Ⓑ Connector
Main C. B
Ⓑ
Ⓑ
Mechanism ASSY

Fig.-3

4. "Front Loading ASSY" Removal (See Figure – 4)
   1) Remove "Main Belt".
   2) Remove 4 screws (Ⓐ).
   3) Release the hooks on both sides and remove the "Front Loading ASSY". (Since it is difficult to release these hooks, hold the front of the "Front Loading ASSY" and shake it up and down to release them.)

5. "Cassette Load Bracket ASSY" Removal (See Figure – 4)
   1) Remove 1 screw (Ⓑ).
   2) Take off the "Cassette Load Bracket ASSY".

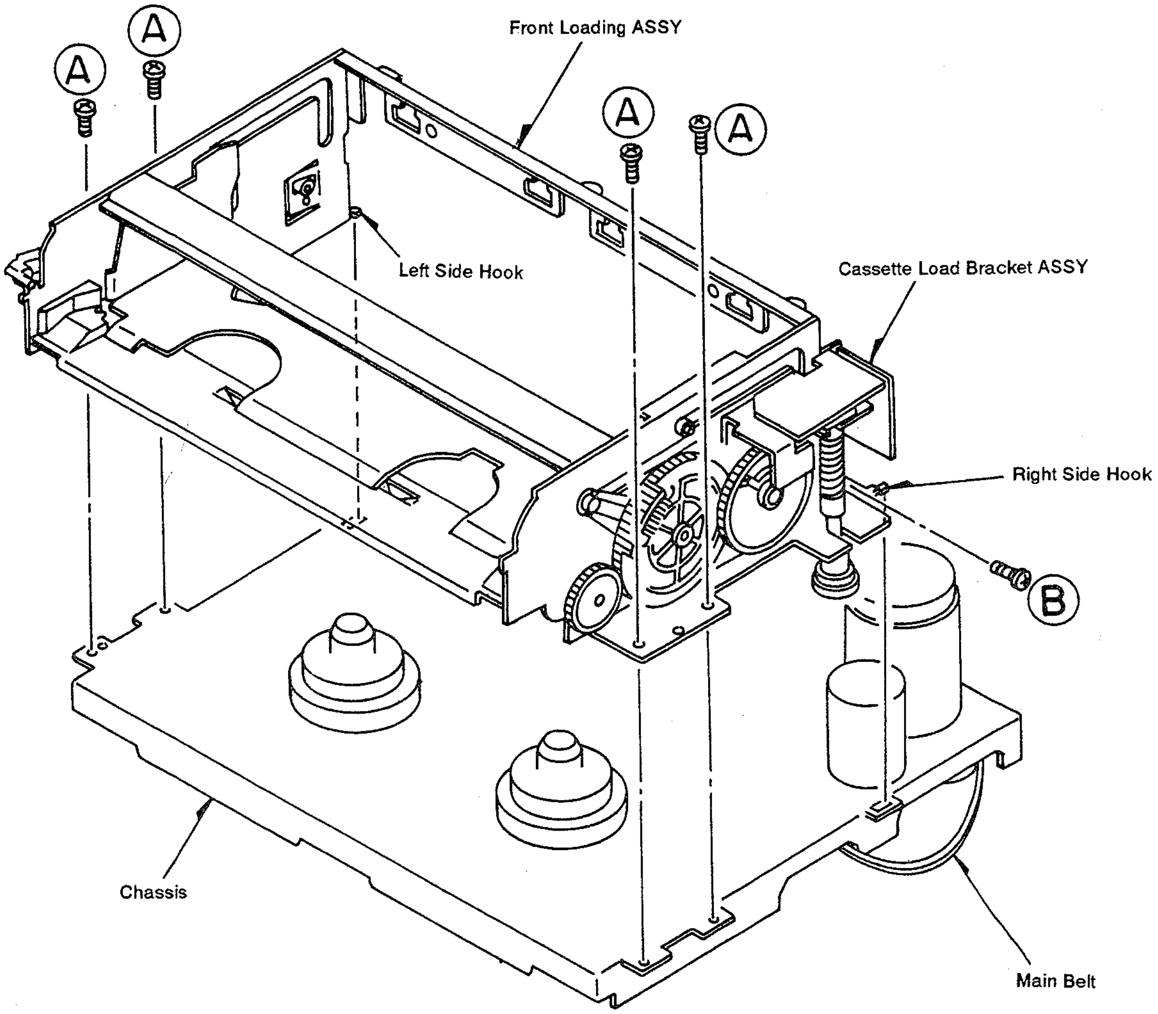

Ⓐ
Ⓐ
Front Loading ASSY
Ⓐ
Ⓐ
Left Side Hook
Cassette Load Bracket ASSY
Right Side Hook
Ⓑ
Chassis
Main Belt

Fig.-4

6. “Photo Sensor ASSY” Removal (See Figure – 5)
    1. “Lamp Holder ASSY” Removal
        1) Remove 1 screw (Ⓐ) and take off the “T Soft Brake ASSY”.
        (At this time, never take off the “T – Spring, Soft Brake Arm”.)
        2) Release the “Lamp Holder ASSY” from hook (a) of the chassis and turn it counterclockwise to remove it from the chassis.
    2. “Switch C. B”, “Sensor Guide” and “End Sensor C. B” Removal
        1) Remove 1 screw (Ⓑ) and take off the “Switch C. B”.
        2) Remove 1 screw (Ⓒ) and take off the “Sensor Guide”.
        3) Remove 1 screw (Ⓓ) and take off the “Start Sensor C. B”.
    3. “Sensor Guide” and “Start Sensor C. B” Removal
        1) Remove 1 screw (Ⓔ) and take off the “Sensor Guide”.
        2) Remove 1 screw (Ⓕ) and take off the “End Sensor C. B”.

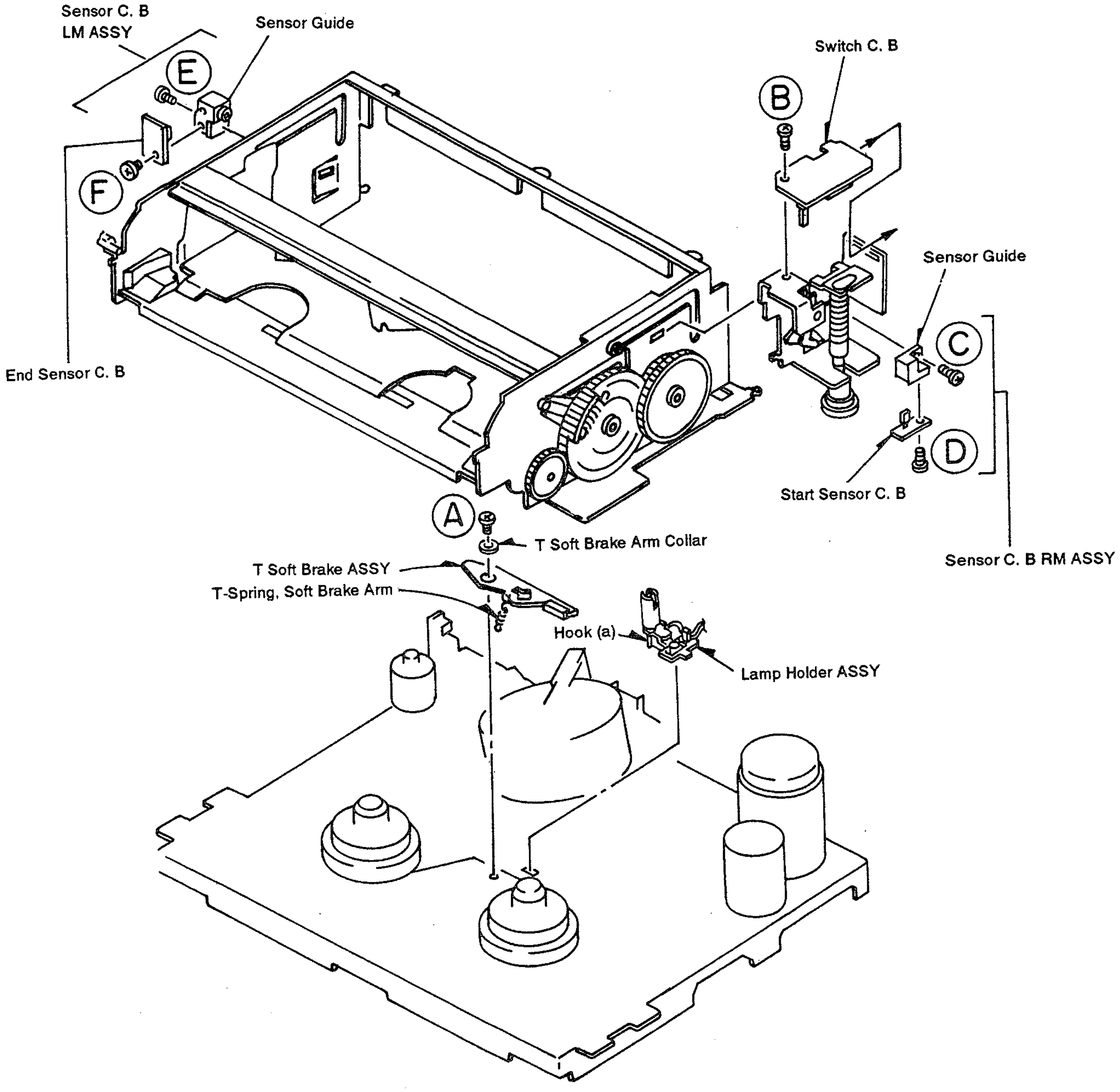

Sensor C. B
LM ASSY
Sensor Guide
E
F
End Sensor C. B
Switch C. B
B
Sensor Guide
C
D
Start Sensor C. B
Sensor C. B RM ASSY
A
T Soft Brake Arm Collar
T Soft Brake ASSY
T-Spring, Soft Brake Arm
Hook (a)
Lamp Holder ASSY

Fig.-5

7. "FE Plate" and "ACE Head" Removal (See Figure – 6)
   1. "FE Plate" Removal
      1) Remove Nut (Ⓐ).
      2) Take out the "Impedance Roller" and pull up the "FE Plate".
         (Take care not to lose parts "Impedance Roller", "Impedance Roller Sleeve", "Tape Guide Flange A", "Tape Guide Flange Spring" and "Plane Washer 3 × 8 × 0.5" at the time of the "FE Plate"removal.)
      3) Remove 1 screw (Ⓑ) and take off the "Full Erase Head".
   2. "ACE Head" Removal
      1) Remove 3 screws (Ⓒ× 1, Ⓓ× 1, Ⓔ× 1) and "Azimuth Spring".
      2) Remove "ACE Head".

8. "Rec Actuator" Removal (See Figure – 6)
   1) Remove "Wire Holder".
   2) Remove screw (Ⓕ) and take off the "Leaf Switch".
   3) Remove screw (Ⓖ) and take off the "FE Actuate Lever", "FE Slide Plate" and "FE Actuate".
   4) Remove screw (Ⓗ) and take off the "Rec Lever", and "Rec Lever Spring".
   5) Remove "Rec Actuate Spoke".
   6) Remove "Rec Actuate".

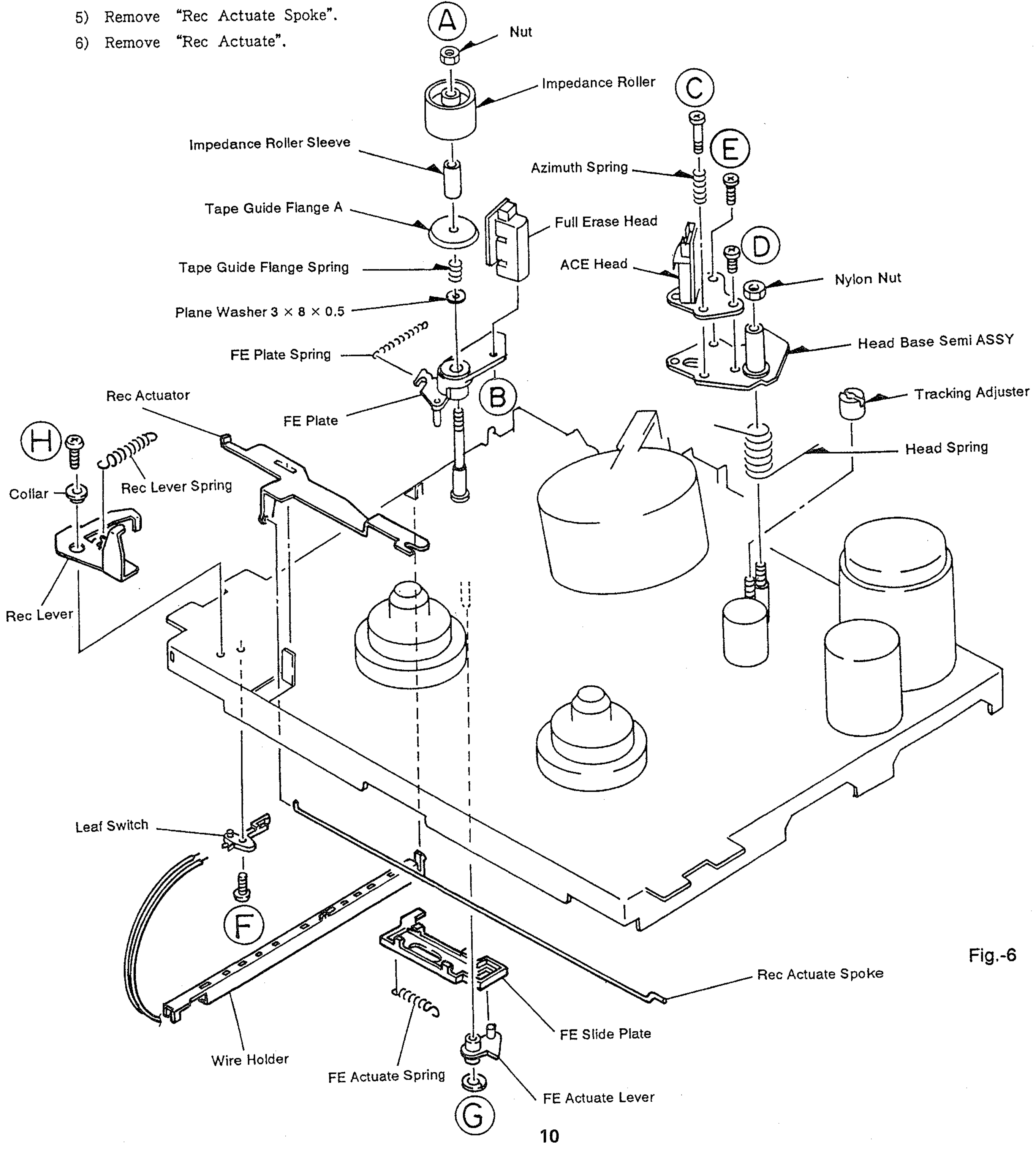

Ⓐ
Nut
Impedance Roller
Ⓒ
Impedance Roller Sleeve
Ⓔ
Azimuth Spring
Tape Guide Flange A
Full Erase Head
Ⓓ
ACE Head
Tape Guide Flange Spring
Nylon Nut
Plane Washer 3 × 8 × 0.5
Head Base Semi ASSY
FE Plate Spring
Tracking Adjuster
Rec Actuator
Ⓑ
FE Plate
Ⓗ
Head Spring
Rec Lever Spring
Collar
Rec Lever
Leaf Switch
Ⓕ
Rec Actuate Spoke
FE Slide Plate
Wire Holder
FE Actuate Spring
FE Actuate Lever
Ⓖ

Fig.-6

9. "Sub Plate ASSY" Removal (See Figure – 7)

1) Remove the "Front Loading ASSY".
2) Remove "Drive Belt".
3) Remove Poly – Washer and "Middle Pulley ASSY".
4) Remove Nylon – Washer (Ⓐ) and take off the "Clutch ASSY".
5) Remove 1 screw (Ⓑ) and 2 screws (Ⓒ) and take off the "Sub Plate ASSY".
6) Remove 1 screw (Ⓓ) and take off the "T – Spring, Soft Brake Arm".
7) Take off the "T Soft Brake ASSY".
8) Remove 2 "E – Rings (Ⓔ)" and take off the 2 "Reel Drive Gear".

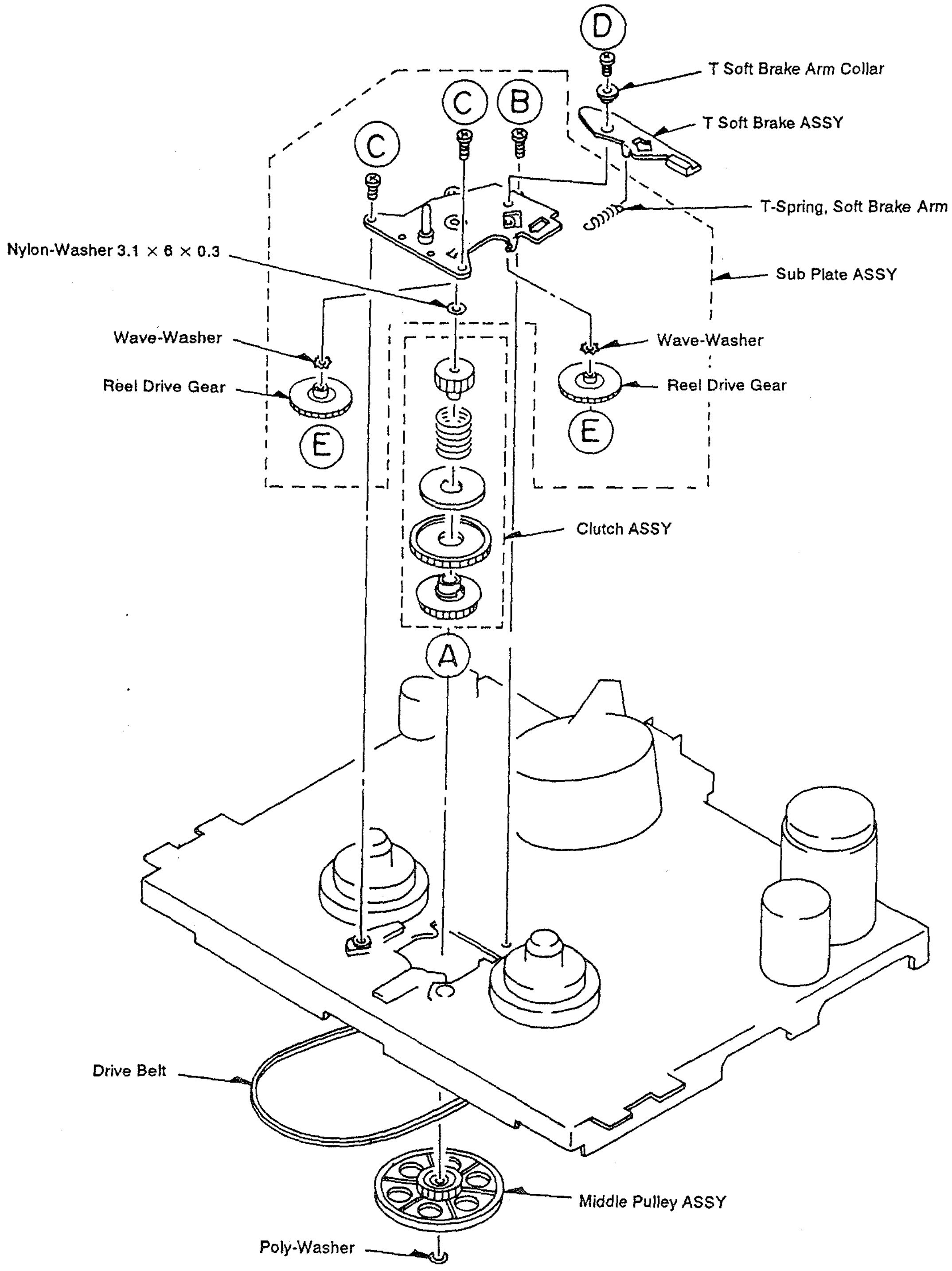

Ⓓ
T Soft Brake Arm Collar
Ⓒ
Ⓑ
T Soft Brake ASSY
Ⓒ
T-Spring, Soft Brake Arm
Nylon-Washer 3.1 × 6 × 0.3
Sub Plate ASSY
Wave-Washer
Wave-Washer
Reel Drive Gear
Reel Drive Gear
Ⓔ
Ⓔ
Clutch ASSY
Ⓐ
Drive Belt
Middle Pulley ASSY
Poly-Washer

Fig.-7

10. "BT Band ASSY" And "BT Arm Semi ASSY" Removal (See Figure – 8)

1) Remove the "Front Loading ASSY".
2) Remove Poly – Washer (Ⓐ) and "BT Actuate Plate Spring" from the "BT Arm Semi ASSY".
3) Remove 1 screw (Ⓑ) and "Band Holder Spring".
4) Take off the "BT Band ASSY" from the "BT Arm Semi ASSY".

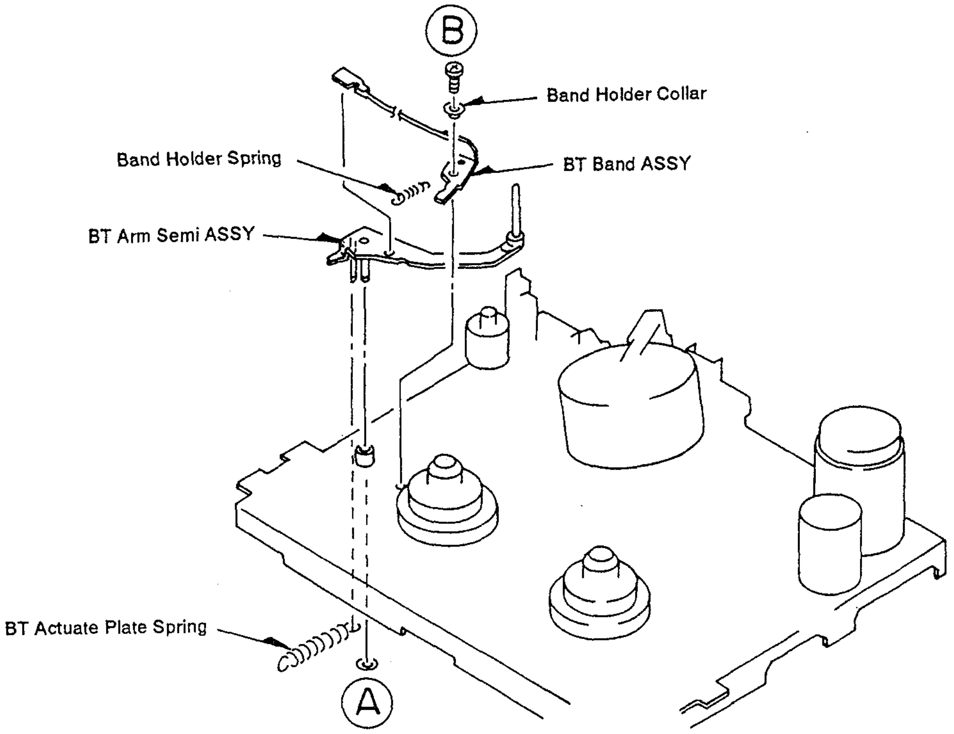

Ⓑ
Band Holder Collar
Band Holder Spring
BT Band ASSY
BT Arm Semi ASSY
BT Actuate Plate Spring
Ⓐ

Fig.-8

11. "Reel ASSY" Removal (See Figure – 9)

1) Remove the "Front Loading ASSY", "Gear Holder ASSY" and "BT Band ASSY".
2) Remove 1 screw (Ⓐ) and the "Back Tension Support".
3) Remove the 2 "Reel ASSY".

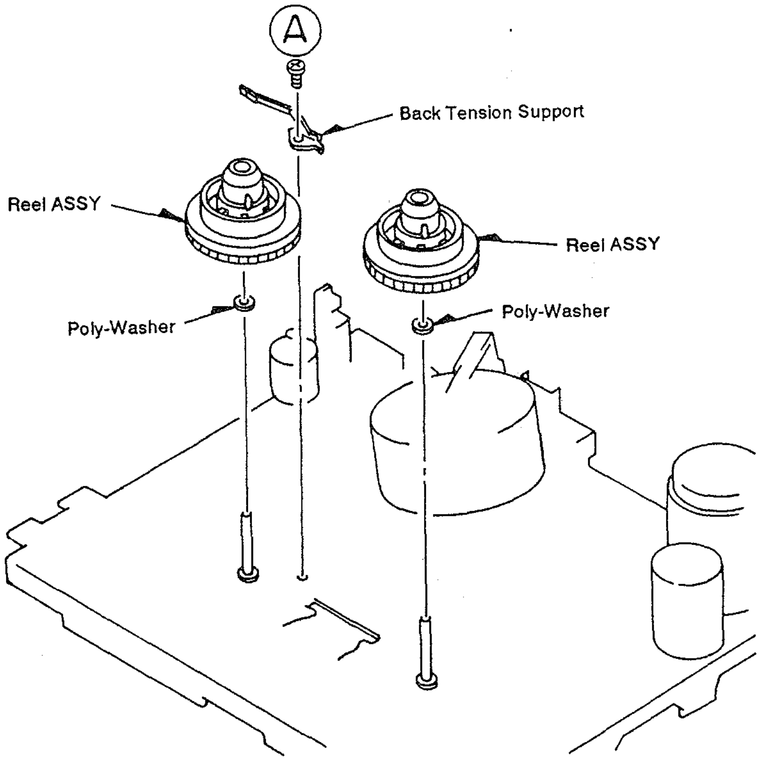

Ⓐ
Back Tension Support
Reel ASSY
Reel ASSY
Poly-Washer
Poly-Washer

Fig.-9

12. "Cylinder ASSY" Removal (See Figure – 10)

1) Remove the "Front Loading ASSY".
2) Pull out the "RELAY C. B – 5" from the "Cylinder Motor TM82".
3) Remove 1 screw (Ⓐ) and take off the "Drum Earth".
4) Remove 3 screws (Ⓑ) and take off the "Cylinder ASSY".

= Remarks =

Take off the "Cylinder ASSY" carefully without any damage.

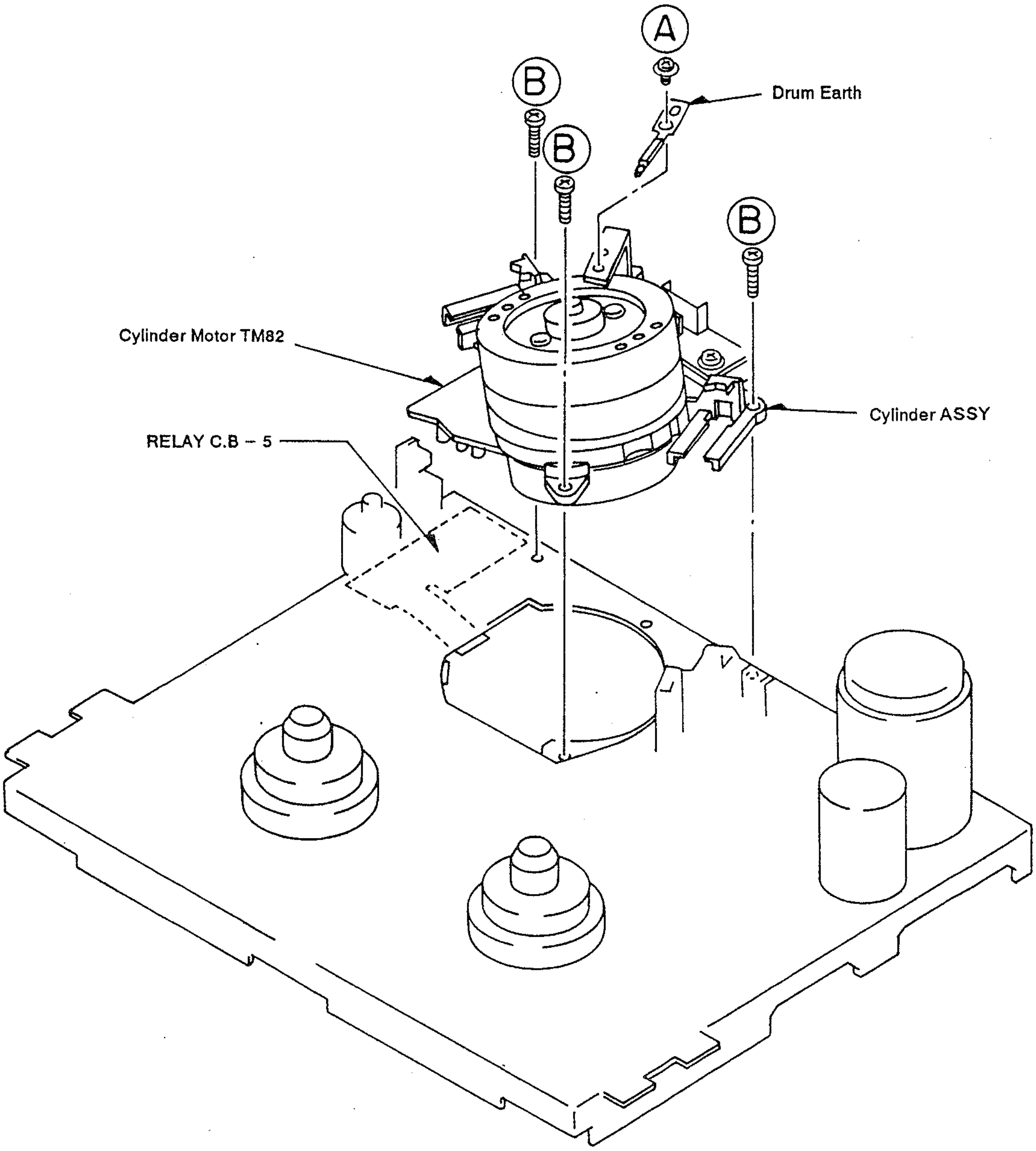

A
B
B
B
Drum Earth
Cylinder Motor TM82
Cylinder ASSY
RELAY C.B – 5

Fig.-10

13. "Upper Drum" Removal (See Figure – 11)
   1) Remove the "Front Loading ASSY".
   2) Remove 1 screw (Ⓐ) and take off the "Drum Earth Bracket".
   3) Remove 2 screws (Ⓑ) and take off the "Upper Drum".

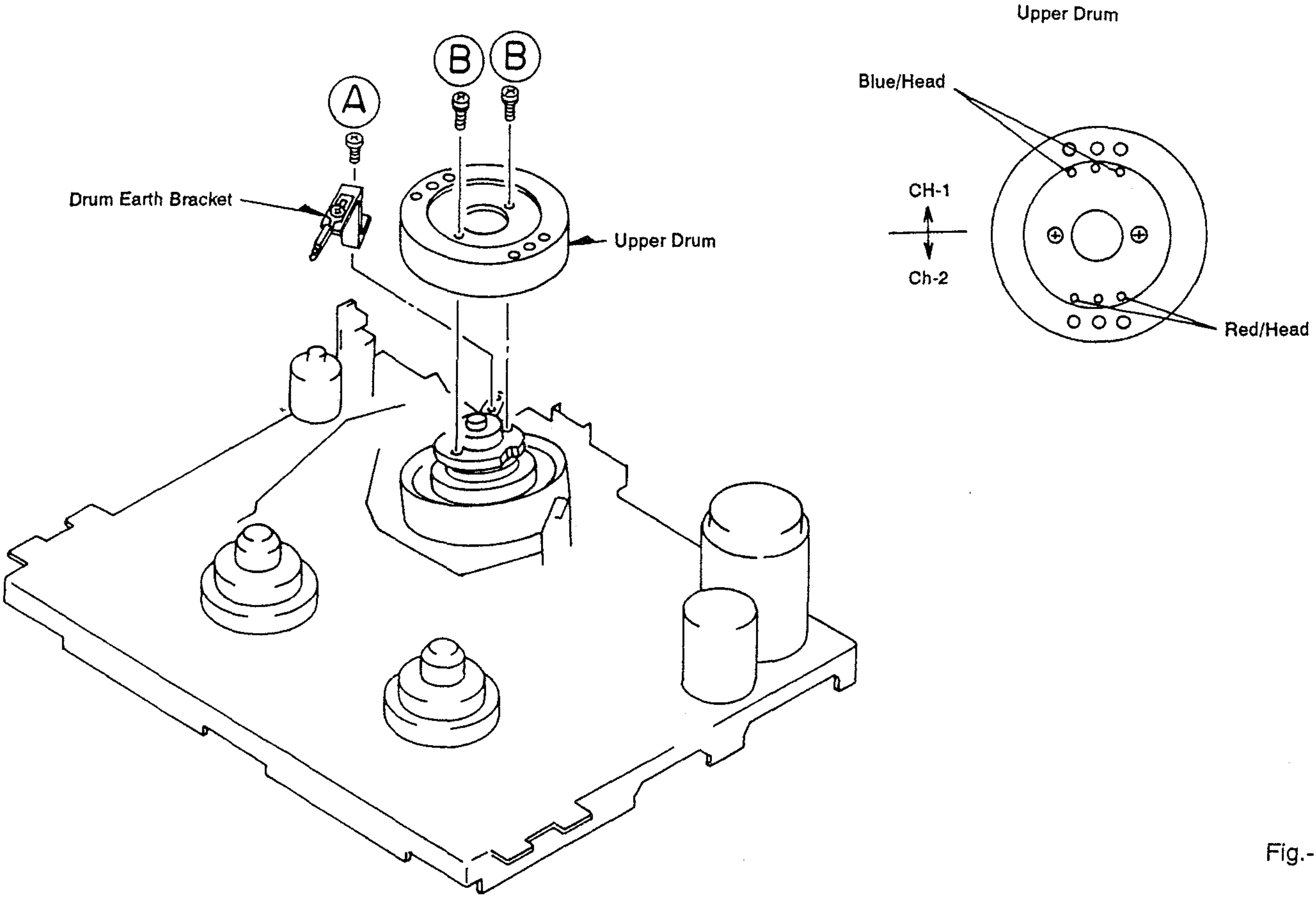

Ⓑ Ⓑ
Ⓐ
Drum Earth Bracket
Upper Drum
Upper Drum
Blue/Head
CH-1
Ch-2
Red/Head

Fig.-11

= Remark =

1. Use gloves and do not touch the drum surface with bare fingers.
2. If the Video head is defective, replace the complete "Upper Drum" with the Head.
3. When installing "Upper Drum" and "Rotor", Upper Drum point ⓐ, Lower Drum point ⓑ and Rotor point ⓒ, these point ⓐ, ⓑ, ⓒ mast line up each other. Otherwise it will creates problem. (See Figure – 11 – 1)

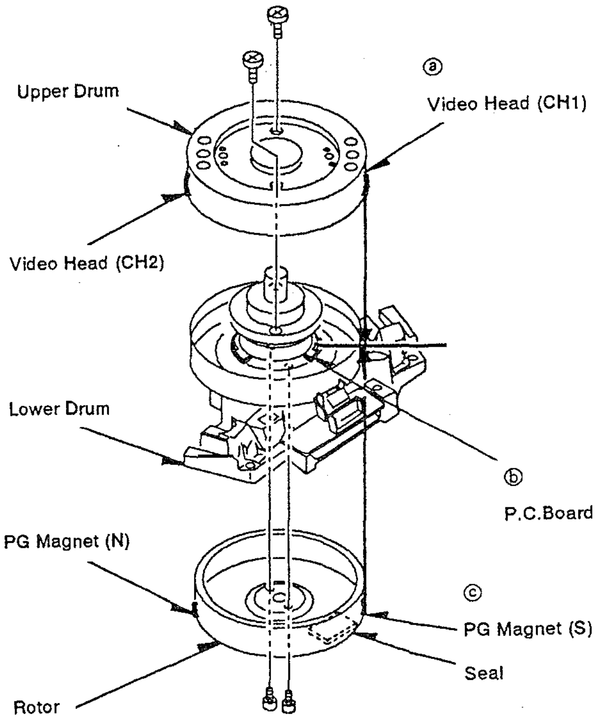
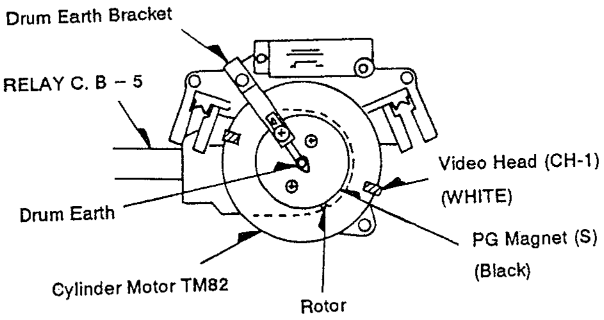

Upper Drum
ⓐ
Video Head (CH1)
Video Head (CH2)
Lower Drum
ⓑ
P.C.Board
PG Magnet (N)
ⓒ
PG Magnet (S)
Seal
Rotor

Fig.-11-1

14. "Cylinder Motor TM82" Removal (See Figure – 12)
   1) Pull out the "RELAY C. B – 5" from the "Cylinder Motor TM82".
   2) Remove 2 screws (Ⓐ) and take off the "Cylinder Motor TM82".
   3) Remove 3 screws (Ⓑ) and take off the "Cylinder Motor TM82".


Drum Earth Bracket
RELAY C. B – 5
Drum Earth
Cylinder Motor TM82
Rotor
Video Head (CH-1) (WHITE)
PG Magnet (S) (Black)

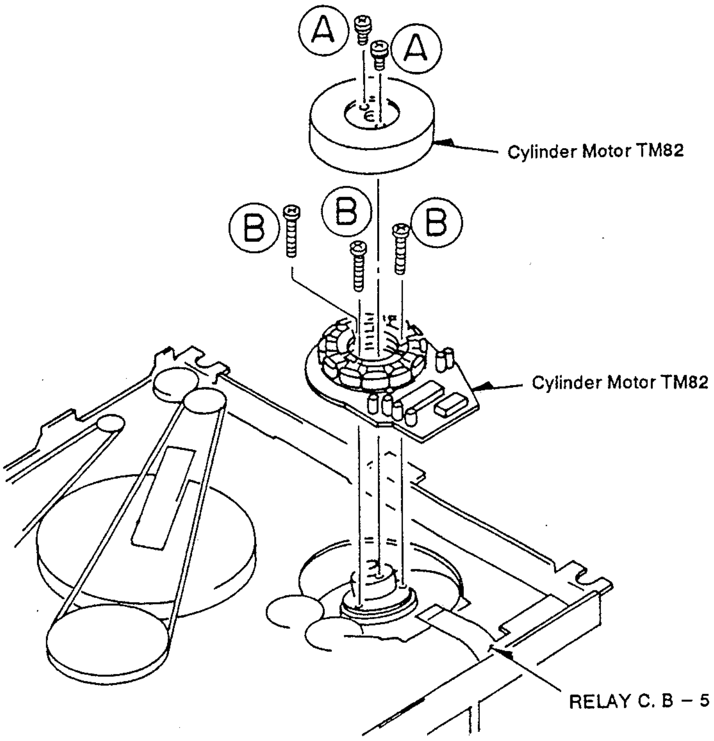

A
A
Cylinder Motor TM82
B
B
B
Cylinder Motor TM82
RELAY C. B – 5

Fig.-12

15. "Capstan Motor ASSY" and "LM ASSY" Removal (See Figure – 13)
   1. "Capstan Motor ASSY" Removal
      1) Take off the "Drive Belt" and "Main Belt".
      2) Remove 2 screws (Ⓐ) and take off the "Capstan Motor ASSY".
   2. "LM ASSY" Removal
      1) Take off the "FI Belt".
      2) Remove 2 screws (Ⓑ) and take off the "LM ASSY".

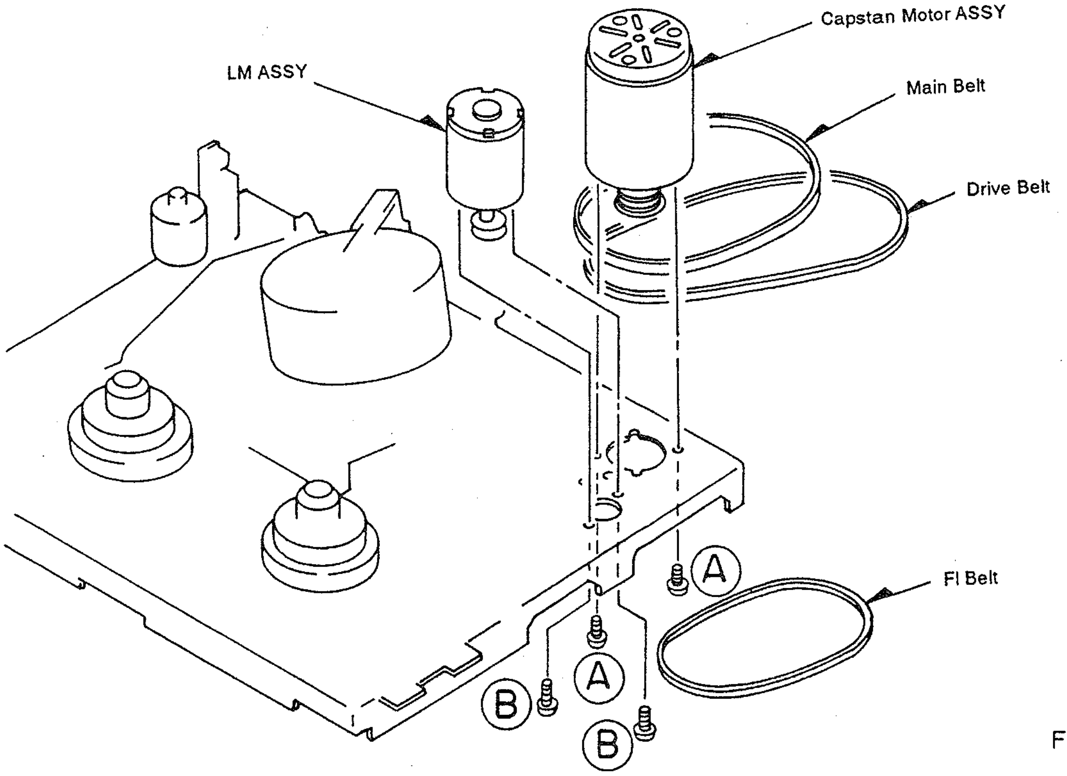

Capstan Motor ASSY
LM ASSY
Main Belt
Drive Belt
A
FI Belt
A
B
B

Fig.-13

16. "Loading Gear" and "Loading Cam ASSY" Removal (See Figure – 14)

1) Take off the "Loading Belt" from the "Loading Pulley".
2) Remove Poly – Washer (Ⓐ) and take off the "Loading Pulley".
3) Remove Poly – Washer (Ⓑ) and take off the "Loading Gear".
4) Remove Poly – Washer (Ⓒ) and take off the "Eject Arm" and the "Brake Actuate Arm".
5) Remove 2 screws (Ⓓ), and take off the "Loading Lever Reinforce Plate" and the "Loading Lever ASSY".
6) Take off the "Loading Cam".

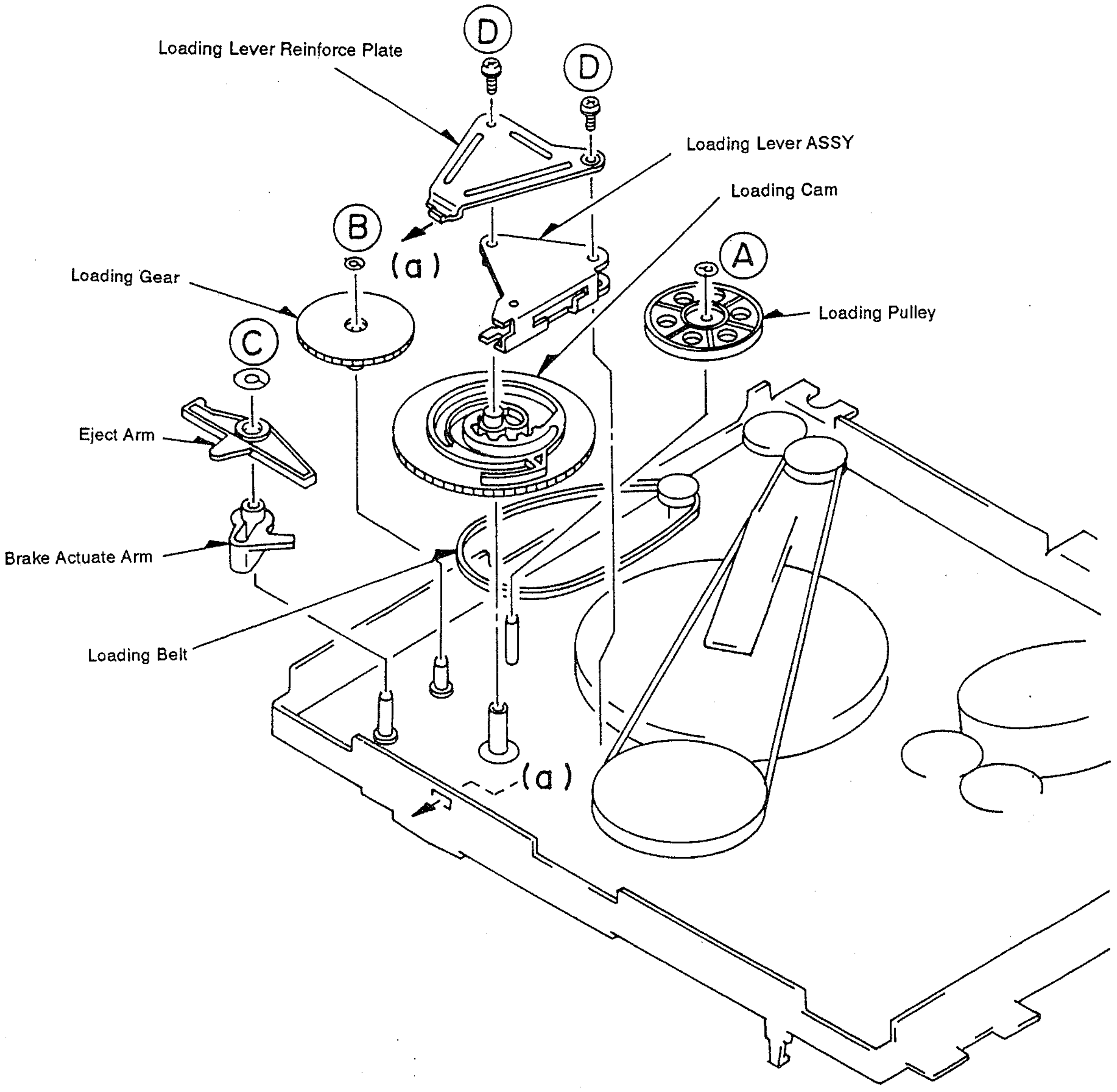

Loading Lever Reinforce Plate
D
D
Loading Lever ASSY
Loading Cam
B
(a)
A
Loading Gear
Loading Pulley
C
Eject Arm
Brake Actuate Arm
Loading Belt
(a)

Fig.-14

17. "Flywheel Capstan" Removal (See Figure – 15)

1) Remove the Nylon – Washer (Ⓐ).
2) Take off the "Drive Belt" and "Main Belt".
3) Remove 2 screws (Ⓑ) and take off the "FL Angle ASSY".
4) Take off the "Flywheel Capstan".

≡ Remark ≡

Do not miss the Poly – Washer (Ⓒ) when pulling out the "Flywheel Capstan".

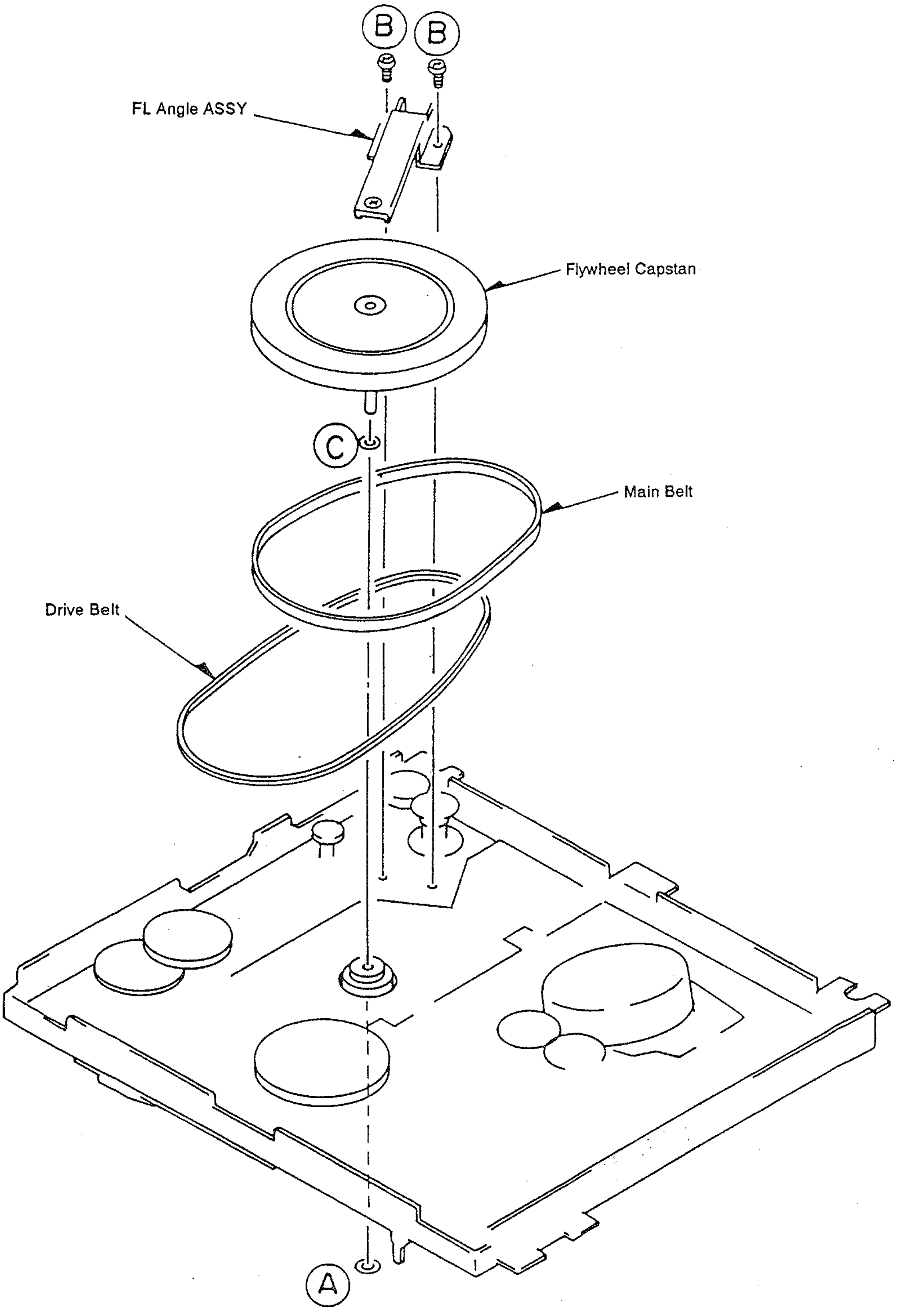

Ⓑ
Ⓑ
FL Angle ASSY
Flywheel Capstan
Ⓒ
Main Belt
Drive Belt
Ⓐ

Fig.-15

18. "Reel Sensor" Removal (See Figure – 16)

1. Remove "Front Loading ASSY" and the "Gear Holder ASSY".
2. Remove "Reel ASSY".
3. Remove "Reel Sensor".

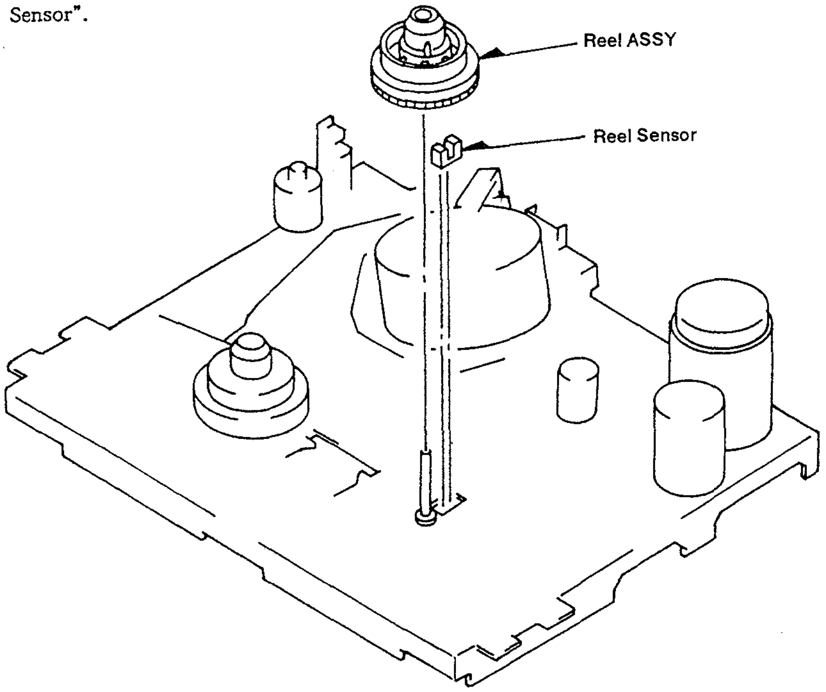

Reel ASSY
Reel Sensor

Fig.-16

19. "Loading Base Semi ASSY" Removal (See Figure – 17)

1) Remove "Cylinder ASSY", "BT Arm Semi ASSY", "BT Band ASSY" and "Front Loading ASSY".
2) Remove 1 screw (Ⓐ) and "L Gear Plate Collar", "L Gear Plate".
3) Remove 2 screws (Ⓑ).
4) Take off the "Loading Base Semi ASSY".

= Remark =

When installing the "L Gear Plate", align markings (Ⓒ) on the "T Loading Gear L" and "L Gear Plate".

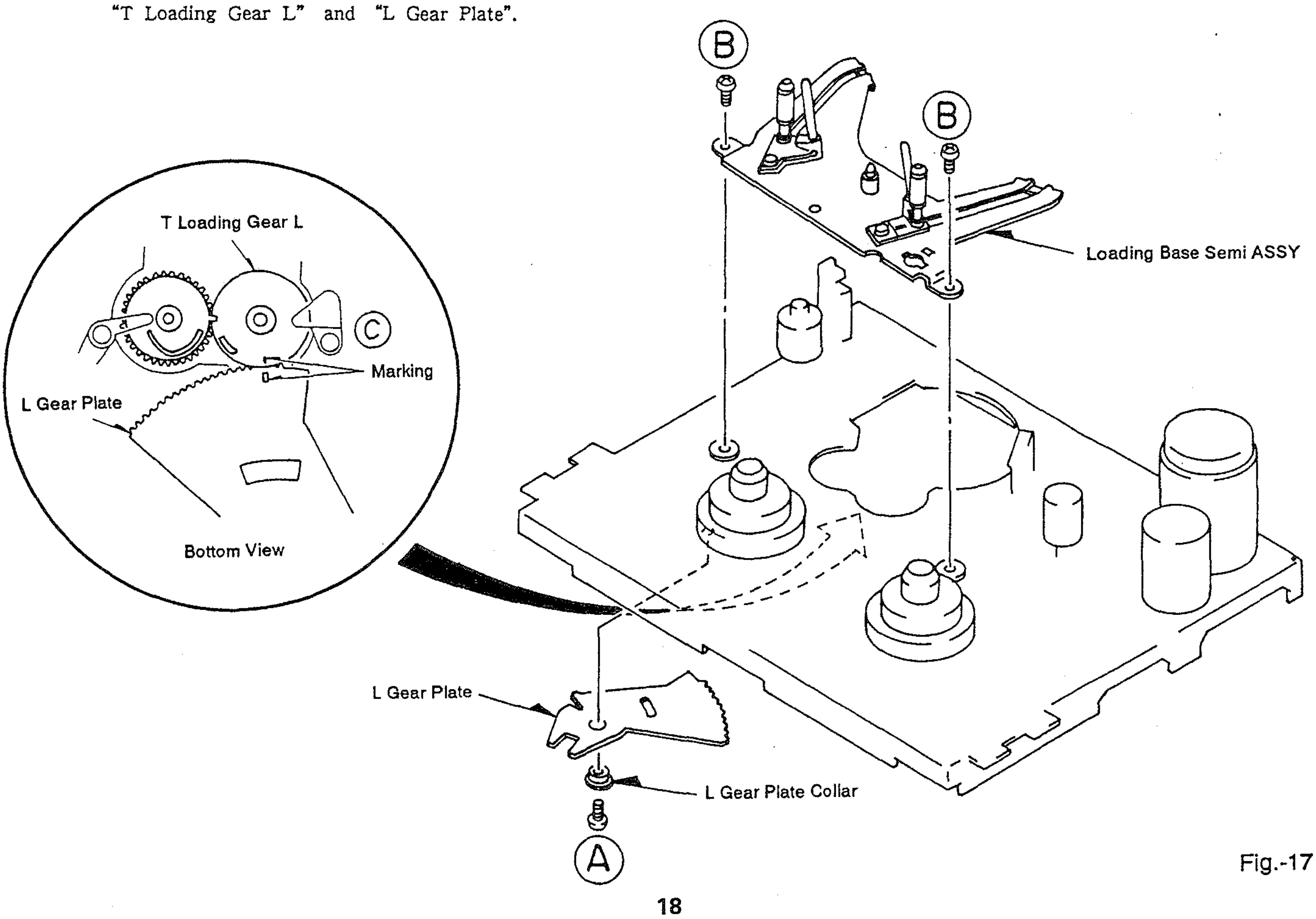

Ⓑ
Ⓑ
Loading Base Semi ASSY
T Loading Gear L
Ⓒ
Marking
L Gear Plate
Bottom View
L Gear Plate
L Gear Plate Collar
Ⓐ

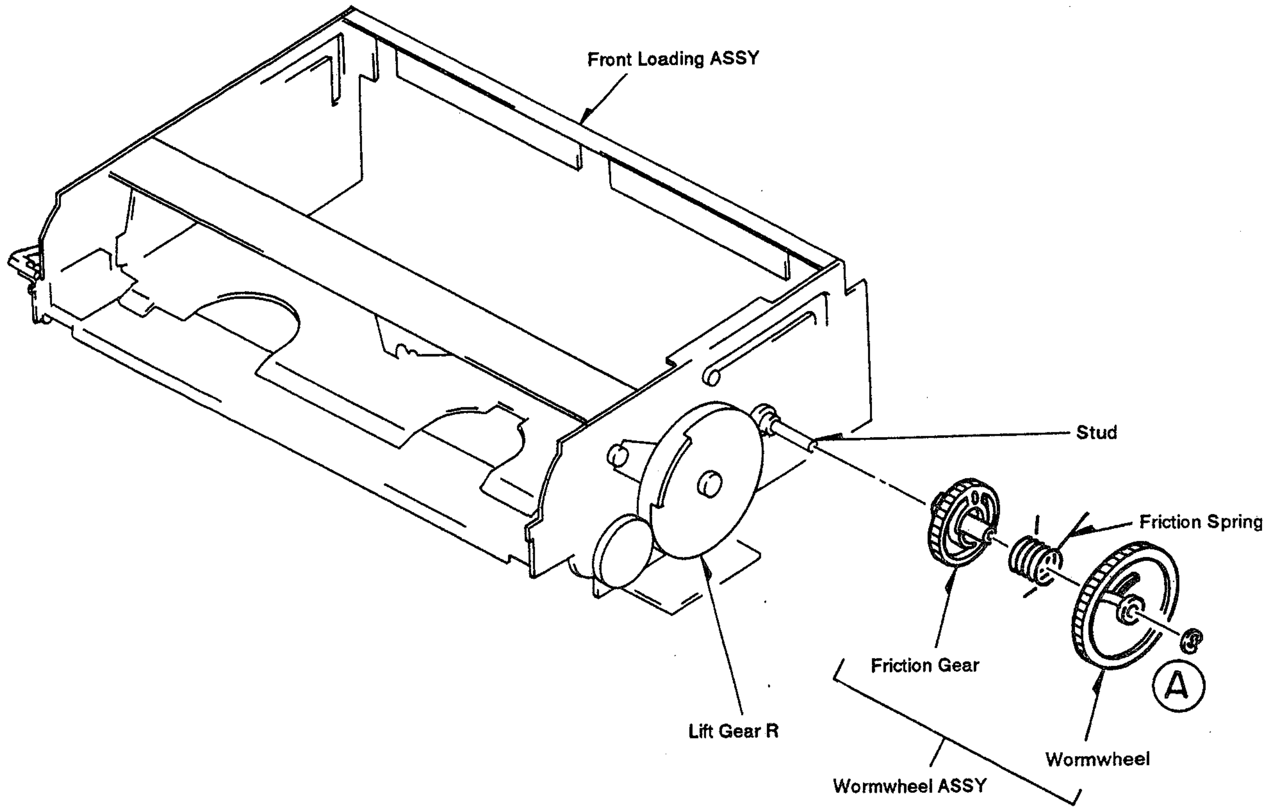
Fig.-17

19. "Wormwheel ASSY" Removal (See Figure – 18)

1. Disassembly
   1) Remove "Front Loading ASSY".
   2) Remove "Cassette Load Bracket ASSY".
   3) Remove E – Ring Ⓐ.
   4) Remove "Wormwheel ASSY." ("Wormwheel", "Friction Spring", "Friction Gear")
2. Assembly
   1) Turn the "Lift Gear R" fully counterclockwise.
   2) Restore "Wormwheel ASSY" to the stud.

= Remark =

Match "Lift Gear R" to the "Wormwheel Hole" as illustrated.


Front Loading ASSY
Stud
Friction Spring
Friction Gear
Ⓐ
Lift Gear R
Wormwheel
Wormwheel ASSY

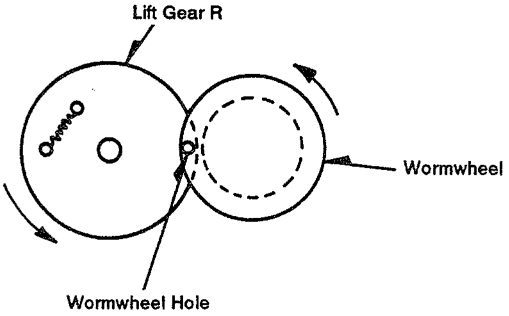

Lift Gear R
Wormwheel
Wormwheel Hole

Fig.-18

ELECTRICAL MAIN PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
=== IC ===		
	S0-05I-C02-040	IC, AN78M05R
	S1-9A0-IC2-030	IC, AN78N05A
	87-001-853-010	IC, BA6209-V3
	87-001-777-010	IC, BA6219B
	87-001-829-010	IC, BA7025L
	87-001-775-010	IC, BA7767AS
	S0-05I-C02-010	IC, HA17431P
	87-001-774-010	IC, LA7320
	87-001-773-010	IC, LA7323
	87-001-901-010	IC, LA7333
	87-020-396-010	IC, LA7910
	87-001-771-010	IC, LC8992
	87-001-855-010	IC, LVA522S
	87-001-180-010	IC, M5223L
	S0-05H-IC1-010	IC, MA2830 F4005
	89-JU5-637-010	IC, MB88525-205M
	89-JU7-614-010	IC, MN67481P
	89-JU5-649-010	IC, MSM16811
	87-001-858-010	IC, PQ09R05
	87-020-923-010	IC, PST523D
	87-001-790-010	IC, SBX1610-52 UNIT(REMOTE SENSOR)
	87-027-564-010	IC, TC4011BP
	87-027-656-010	IC, TC4066BP
	87-027-327-010	IC, UPC574J
	89-JU5-650-010	IC, UPD1730CT
	89-JU5-686-010	IC, UPD75208CW-A83
=== TRANSISTOR ===		
	87-026-452-010	TRANSISTOR, 2SA933S
	87-026-463-010	TRANSISTOR, 2SA933SR
	89-110-484-010	TRANSISTOR, 2SA1048Y
	89-207-333-010	TRANSISTOR, 2SB733K3
	87-026-462-010	TRANSISTOR, 2SC1740SR
	89-322-746-010	TRANSISTOR, 2SC2274
	89-339-406-010	TRANSISTOR, 2SC3940A
	S0-05Q-003-010	TRANSISTOR, 2SD2061
	87-026-219-010	TRANSISTOR, DTA144ES
	87-026-245-010	TRANSISTOR, DTC114ES
	87-026-218-010	TRANSISTOR, DTC144ES
=== DIODE ===		
	87-020-465-010	DIODE, 1SS133
	87-020-752-010	DIODE, 1SS202(1)-T1
	87-020-752-010	DIODE, 1SS270A-TD
	S0-05D-002-030	DIODE, D1NL-20-4070
	S0-05D-001-010	DIODE, S1WBA60
	S0-05D-002-010	DIODE, S3LA20-04P15
	SU-S10-40M-000	DIODE, US1040M
	87-002-250-010	DIODE, ZENER 05AZ5.1-X
	87-027-584-010	DIODE, ZENER HZ9C1L
	87-027-171-010	DIODE, ZENER RD2.7ESB2
	S1-9A0-D02-070	DIODE, ZENER RD24F-B2-T7
	S0-05D-003-040	DIODE, ZENER RD47EB
	S1-9A0-D01-030	DIODE, ZENER RD6.2F-B2-T7
=== MAIN CIRCUIT BOARD SECTION ===		
C401	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C402	★87-010-263-010	CAP, ELECT 100-10
C403	★87-010-405-010	CAP, ELECT 10-50 SME
C404	★87-010-405-010	CAP, ELECT 10-50 SME
C411	★87-010-263-010	CAP, ELECT 100-10
C412	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C413	★87-010-405-010	CAP, ELECT 10-50 SME
C416	★87-010-615-010	CAP, ELECT BP 2.2-50
C417	★87-010-400-010	CAP, ELECT 0.47-50 SME
C418	★87-018-106-010	CAP, CERA-SOL SS 15P-50 SL
C420	★87-018-126-010	CAP, CERA-SOL SS 390P-50 B
C421	★87-018-143-010	CAP, CERA-SOL SS 4.7P-50 CH
C422	★87-010-263-010	CAP, ELECT 100-10
C423	★87-018-213-010	CAP, CERA-SOL SS 0.047-50 F
C424	★87-010-401-010	CAP, ELECT 1-50 SME
C425	★87-010-404-010	CAP, ELECT 4.7-50 SME
C426	★87-010-546-010	CAP, ELECT 0.33-50 SME
C427	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C428	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C429	★87-018-110-010	CAP, CERA-SOL SS 24P-50 SL
C430	★87-018-118-010	CAP, CERA-SOL SS 82P-50 B
C431	★87-018-110-010	CAP, CERA-SOL SS 24P-50 SL
C432	★87-010-402-010	CAP, ELECT 2.2-50 SME
C434	★87-018-120-010	CAP, CERA-SOL SS 120P-50 B
C435	★87-018-104-010	CAP, CERA-SOL SS 10P-50 SL
C436	★87-018-116-010	CAP, CERA-SOL SS 56P-50 SL
C437	★87-018-131-010	CAP, CERA-SOL SS 1000P-50 B
C438	★87-018-133-010	CAP, CERA-SOL SS 4700P-16 X
C439	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C440	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C441	★87-010-402-010	CAP, ELECT 2.2-50 SME
C442	★87-010-405-010	CAP, ELECT 10-50 SME
C443	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C444	★87-010-403-010	CAP, ELECT 3.3-50 SME
C445	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C447	★87-018-126-010	CAP, CERA-SOL SS 390P-50 B
C449	★87-018-117-010	CAP, CERA-SOL SS 68P-50 SL
C450	★87-018-121-010	CAP, CERA-SOL SS 150P-50 B
C451	★87-010-260-010	CAP, ELECT 47-25 SME
C452	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C453	★87-018-121-010	CAP, CERA-SOL SS 150P-50 B
C461	★87-010-263-010	CAP, ELECT 100-10
C462	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C463	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C464	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C465	★87-018-119-010	CAP, CERA-SOL SS 100P-50 B
C466	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C467	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C468	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C469	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C470	★87-018-119-010	CAP, CERA-SOL SS 100P-50 B
C471	★87-018-205-010	CAP, CERA-SOL SS 0.022-25 F
C472	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C473	★87-010-401-010	CAP, ELECT 1-50 SME
C474	★87-010-401-010	CAP, ELECT 1-50 SME
C475	★87-010-401-010	CAP, ELECT 1-50 SME
C476	★87-018-205-010	CAP, CERA-SOL SS 0.022-25 F
C477	★87-018-213-010	CAP, CERA-SOL SS 0.047-50 F
C479	★87-010-263-010	CAP, ELECT 100-10
C480	★87-010-401-010	CAP, ELECT 1-50 SME
C481	★87-018-213-010	CAP, CERA-SOL SS 0.047-50 F
C484	★87-018-112-010	CAP, CERA-SOL SS 30P-50 SL
C485	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C486	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C487	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C511	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C512	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C514	★87-010-263-010	CAP, ELECT 100-10
C515	★87-010-265-010	CAP, ELECT 33-16V
C516	★87-010-263-010	CAP, ELECT 100-10

REF. NO.	PART NO.	DESCRIPTION
C520	★87-018-114-010	CAP, CERA-SOL SS 39P-50 SL
C551	★87-010-371-010	CAP, ELECT 470-6.3
C552	★87-010-405-010	CAP, ELECT 10-50 SME
C581	★87-010-405-010	CAP, ELECT 10-50 SME
C582	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C583	★87-010-263-010	CAP, ELECT 100-10
C584	★87-010-405-010	CAP, ELECT 10-50 SME
C586	★87-018-125-010	CAP, CERA-SOL SS 330P-50 B
C587	★87-018-125-010	CAP, CERA-SOL SS 330P-50 B
C801	★87-010-404-010	CAP, ELECT 4.7-50 SME
C803	★87-010-404-010	CAP, ELECT 4.7-50 SME
C804	★87-010-405-010	CAP, ELECT 10-50 SME
C805	★87-010-404-010	CAP, ELECT 4.7-50 SME
C806	★87-010-402-010	CAP, ELECT 2.2-50 SME
C807	★87-010-381-010	CAP, ELECT 330-16 SME
C808	★87-010-265-010	CAP, ELECT 33-16 SME
C812	★87-018-127-010	CAP, CERA-SOL SS 470P-50 B
C813	★87-010-406-010	CAP, ELECT 47-50
C814	★87-010-791-010	CAP, ELECT 33-63 SME
C815	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C816	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C817	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C818	★87-018-196-010	CAP, CERA-SOL SS 1500P-16 X
C819	★87-010-545-010	CAP, ELECT 0.22-50 SME
C820	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C821	★87-010-384-010	CAP, ELECT 100-25 SME
C822	★87-010-402-010	CAP, ELECT 2.2-50 SME
C838	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C840	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C841	★87-010-384-010	CAP, ELECT 100-25 SME
C842	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C843	★87-010-260-010	CAP, ELECT 47-25 SME
C844	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C845	★87-010-405-010	CAP, ELECT 10-50 SME
C852	★87-018-115-010	CAP, CERA-SOL SS 47P-50 SL
C853	★87-018-115-010	CAP, CERA-SOL SS 47P-50 SL
C881	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C882	★87-010-384-010	CAP, ELECT 100-25 SME
C883	★87-010-381-010	CAP, ELECT 330-16 SME
C884	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C885	★87-010-405-010	CAP, ELECT 10-50 SME
C889	★87-010-260-010	CAP, ELECT 47-25 SME
C890	★87-010-403-010	CAP, ELECT 3.3-50 SME
C891	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C892	★87-010-384-010	CAP, ELECT 100-25 SME
DL461	★89-JU8-619-010	DL, EFD-JF124A13F
FIL411	★89-JU5-667-010	FILTER, LPF 3M 7YCP
FIL461	★89-JU7-644-010	FILTER, LPF 1M
FIL462	★89-JU5-666-010	FILTER, AC-7 4.43M
FIL463	★87-008-416-010	FILTER, SFS 5.06ME
FIL511	★89-JU5-663-010	FILTER, SFE4.5MB
J401	89-JU7-646-010	JACK PIN 2-2(AUDIO/VIDEO IN)
J402	89-JU7-646-010	JACK PIN 2-2(AUDIO/VIDEO OUT)
L401	★87-005-444-010	COIL, 100UH
L402	★87-005-444-010	COIL, 100UH
L411	★87-005-444-010	COIL, 100UH
L412	★87-005-444-010	COIL, 100UH
L413	★87-003-281-010	COIL, 3.9UH LAL02
L415	★87-003-288-010	COIL, 180UH LAL02
L416	★87-003-150-010	COIL, 68UH LAL02
L417	★87-003-150-010	COIL, 68UH LAL02
L461	★87-005-444-010	COIL, 100UH
L462	★87-005-476-010	COIL, 18UH J
L463	★87-008-142-010	COIL, 3.3UH LAL02
L464	★87-003-284-010	COIL, 27UH LAL02
L511	★82-132-631-010	COIL, 4.7MMH, J
L801	★87-005-444-010	COIL, 100UH
L809	★87-005-444-010	COIL, 100UH
L810	★87-005-444-010	COIL, 100UH
L811	★87-005-444-010	COIL, 100UH
L812	★87-005-440-010	COIL, 47UH
L814	★87-005-444-010	COIL, 100UH
RF801	89-JU5-672-010	RF MOD, E7553TG(DK915KE)
RF801	80-JU4-631-010	RF MOD, D720A(G70SH, SE)
RF801	89-JU5-693-010	RF MOD, E773A(G70DH)
SFR411	★87-024-172-010	SFR, 10K
SFR412	★87-024-172-010	SFR, 10K
SFR413	★87-024-172-010	SFR, 10K
SFR414	★87-024-168-010	SFR, 1K
SFR415	★87-024-168-010	SFR, 1K
SFR416	★87-024-170-010	SFR, 3.3K
SFR461	★87-024-168-010	SFR, 1K
SFR801	★87-024-170-010	SFR, 3.3K
TU801	89-JU5-652-010	TV TUNER 6CZV2(G70SH, SE)
TU801	89-JU5-653-010	TV TUNER F4EH-721(G70DH, DK915KE)
VIF801	89-JU5-691-010	VIF PACK, VNAI02M-02(DK915KE)
VIF801	89-JU5-656-010	VIF PACK, RFIVC(G70SH, SE)
VIF801	89-JU5-690-010	VIF PACK, 01M-04(G70DH)
X461	★89-JU7-641-010	RESONATOR, CRYSTAL 4.43M
X801	★87-030-188-010	RESONATOR, CERAMIC 4.5MGW

=== SERVO/SYSCON CIRCUIT BOARD SECTION ===

REF. NO.	PART NO.	DESCRIPTION
C201	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C202	★87-010-263-010	CAP, ELECT 100-10
C204	★87-010-401-010	CAP, ELECT 1-50 SME
C205	★87-010-374-010	CAP, ELECT 47-10
C206	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C207	★87-010-405-010	CAP, ELECT 10-50 SME
C208	★87-010-615-010	CAP, ELECT BP 2.2-50
C209	★87-010-405-010	CAP, ELECT 10-50 SME
C210	★87-010-405-010	CAP, ELECT 10-50 SME
C211	★87-018-213-010	CAP, CERA-SOL SS 0.047-50 F
C212	★87-010-401-010	CAP, ELECT 1-50 SME
C213	★87-010-401-010	CAP, ELECT 1-50 SME
C214	★87-018-205-010	CAP, CERA-SOL SS 0.022-25 F
C215	★87-010-401-010	CAP, ELECT 1-50 SME
C216	★87-010-401-010	CAP, ELECT 1-50 SME
C217	★21-018-213-010	CAP, CERA-SOL SS 0.047-50 F
C218	★87-018-213-010	CAP, CERA-SOL SS 0.047-50 F
C219	★87-018-205-010	CAP, CERA-SOL SS 0.022-25 F
C220	★87-010-263-010	CAP, ELECT 100-10
C221	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C222	★87-018-213-010	CAP, CERA-SOL SS 0.047-50 F
C223	★87-010-265-010	CAP, ELECT 33-16 SME
C224	★87-018-205-010	CAP, CERA-SOL SS 0.022-25 F
C225	★87-018-205-010	CAP, CERA-SOL SS 0.022-25 F
C226	★87-010-545-010	CAP, ELECT 0.22-50 SME
C227	★87-010-263-010	CAP, ELECT 100-10
C228	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C229	★87-018-213-010	CAP, CERA-SOL SS 0.047-50 F
C230	★87-018-214-010	CAP, CERA-SOL SS 0.1-50 F
C231	★87-018-214-010	CAP, CERA-SOL SS 0.1-50 F
C232	★87-018-214-010	CAP, CERA-SOL SS 0.1-50 F
C233	★87-010-384-010	CAP, ELECT 100-25 SME
C234	★87-018-214-010	CAP, CERA-SOL SS 0.1-50 F
C235	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C236	★87-010-263-010	CAP, ELECT 100-10
C237	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y

REF. NO.	PART NO.	DESCRIPTION
C243	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C244	★87-018-214-010	CAP, CERA-SOL SS 0.1-50 F
C245	★87-010-384-010	CAP, ELECT 100-25 SME
C247	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C248	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
L201	★87-005-440-010	COIL, 47UH FLR50
L203	★87-006-189-010	COIL, 220UH EL0909
L204	★87-006-189-010	COIL, 220UH EL0909
⚠R254	★87-029-082-010	RES, FUSE 100-1/4W
⚠R266	★87-029-361-010	RES, FUSE 3.3-1/2W
⚠R282	★87-029-361-010	RES, FUSE 3.3-1/2W
SFR201	★87-024-277-010	SFR, 220K
SFR202	★87-024-277-010	SFR, 220K
X201	★87-030-185-010	RESONATOR, CERAMIC KBR6.0MES

=== PRE AMP/AUDIO CIRCUIT BOARD SECTION ===

REF. NO.	PART NO.	DESCRIPTION
C601	★87-010-248-010	CAP, ELECT 220-10 SME
C602	★87-018-205-010	CAP, CERA-SOL SS 0.022-25 F
C603	★87-010-260-010	CAP, ELECT 47-25 SME
C604	★87-018-205-010	CAP, CERA-SOL SS 0.022-25 F
C606	★87-018-213-010	CAP, CERA-SOL SS 0.047-50 F
C610	★87-018-205-010	CAP, CERA-SOL SS 0.022-25 F
C611	★87-018-205-010	CAP, CERA-SOL SS 0.022-25 F
C612	★87-015-695-010	CAP, ELECT 1-50
C613	★87-018-205-010	CAP, CERA-SOL SS 0.022-25 F
C614	★87-018-205-010	CAP, CERA-SOL SS 0.022-25 F
C615	★87-018-205-010	CAP, CERA-SOL SS 0.022-25 F
C616	★87-018-205-010	CAP, CERA-SOL SS 0.022-25 F
C617	★87-018-205-010	CAP, CERA-SOL SS 0.022-25 F
C618	★87-018-205-010	CAP, CERA-SOL SS 0.022-25 F
C630	★87-018-205-010	CAP, CERA-SOL SS 0.022-25 F
C631	★87-018-115-010	CAP, CERA-SOL SS 47P-50 SL
C632	★87-018-120-010	CAP, CERA-SOL SS 120P-50 B
C633	★87-018-205-010	CAP, CERA-SOL SS 0.022-25 F
C634	★87-018-205-010	CAP, CERA-SOL SS 0.022-25 F
C636	★87-018-120-010	CAP, CERA-SOL SS 120P-50 B
C637	★87-018-125-010	CAP, CERA-SOL SS 330P-50 B
C702	★87-018-123-010	CAP, CERA-SOL SS 220P-50 B
C703	★87-015-684-010	CAP, ELECT 47-16
C704	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C705	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C706	★87-015-687-010	CAP, ELECT 33-25
C707	★87-010-384-010	CAP, ELECT 100-25 SME
C708	★87-018-205-010	CAP, CERA-SOL SS 0.022-25 F
C709	★87-010-403-010	CAP, ELECT 3.3-50 SME
C710	★87-010-404-010	CAP, ELECT 4.7-50 SME
C712	★87-010-402-010	CAP, ELECT 2.2-50 SME
C717	★87-018-197-010	CAP, CERA-SOL SS 1800P-16 X
C718	★87-010-404-010	CAP, ELECT 4.7-50 SME
C719	★87-018-119-010	CAP, CERA-SOL SS 100P-50 B
C720	★87-010-382-010	CAP, ELECT 22-25 SME
C722	★87-015-695-010	CAP, ELECT 1-50
C723	★87-018-133-010	CAP, CERA-SOL SS 4700P-16 X
C724	★87-018-131-010	CAP, CERA-SOL SS 1000P-50 B
C725	★87-015-676-010	CAP, ELECT 47-6.3
C726	★87-015-695-010	CAP, ELECT 1-50
C727	★87-018-214-010	CAP, CERA-SOL SS 0.1-50 F
C732	★87-018-214-010	CAP, CERA-SOL SS 0.1-50 F
C734	★87-018-133-010	CAP, CERA-SOL SS 4700P-16 X
L601	★87-005-432-010	COIL, 10UH
L602	★87-005-444-010	COIL, 100UH
L630	★87-003-149-010	COIL, 47UH
L631	★87-003-403-010	COIL, 5.6UH LAL02
L633	★87-003-146-010	COIL, 15UH LAL02
L634	★87-003-288-010	COIL, 180UH LAL02
L701	★89-JU8-609-010	COIL, 18MMH
L702	★87-003-152-010	COIL, 100UH
T701	★89-JU8-610-010	COIL, OSC BIAS-70K

=== TIMER CIRCUIT BOARD SECTION ===

REF. NO.	PART NO.	DESCRIPTION
C901	★87-015-682-010	CAP, ELECT 22-16
C902	★87-015-682-010	CAP, ELECT 22-16
C903	★87-018-213-010	CAP, CERA-SOL SS 0.047-50 F
C904	★87-015-682-010	CAP, ELECT 22-16
C905	★87-018-213-010	CAP, CERA-SOL SS 0.047-50 F
C907	★87-015-687-010	CAP, ELECT 33-25
C909	★87-018-148-010	CAP, CERA-SOL SS 12P-50 CH
FL901	81-JU6-620-010	FL, 9-MT-107G(DISPLAY)
L901	★87-003-152-010	COIL, 100UH
L902	★87-003-152-010	COIL, 100UH
RV901	87-024-225-010	VR, 250KB(TRACKING)
SW902	87-036-214-010	TACT SW(EJECT)
SW903	87-036-214-010	TACT SW(STOP)
SW904	87-036-214-010	TACT SW(PLAY)
SW905	87-036-214-010	TACT SW(REW)
SW906	87-036-214-010	TACT SW(F.FWD)
SW907	87-036-214-010	TACT SW(NOISE CANCEL, PAUSE/STILL
SW908	87-036-214-010	TACT SW(RECORD)
SW909	87-036-214-010	TACT SW(QTR)
SW910	87-036-214-010	TACT SW(TIMER REC)
SW911	87-036-214-010	TACT SW(COUNTER RESET)
SW912	87-036-214-010	TACT SW(COUNTER MEMORY)
SW914	87-036-214-010	TACT SW(CLOCK/COUNTER)
SW915	87-036-214-010	TACT SW(CHECK/PRGM)
SW916	87-036-214-010	TACT SW(NEXT)
SW917	87-036-214-010	TACT SW(CLEAR)
SW918	87-036-214-010	TACT SW(TIME SET)
SW919	87-036-214-010	TACT SW(CHANNEL UP)
SW920	87-036-214-010	TACT SW(CHANNEL DOWN)
SW921	87-036-214-010	TACT SW(RESET)
SW922	87-036-214-010	TACT SW(CH-10)
SW923	87-036-214-010	TACT SW(CH-1)
SW924	87-036-214-010	TACT SW(TUNING +)
SW925	87-036-214-010	TACT SW(TUNING -)
SW926	87-036-214-010	TACT SW(INPUT SELECT)
SW929	87-036-214-010	TACT SW(BAND)
SW931	87-036-214-010	TACT SW(TEST)
X901	★87-030-184-010	RESONATOR, CERAMIC KBR4.19MES
X902	★87-030-194-010	RESONATOR, CRYSTAL 32.768K5PPM

=== POWER SW CIRCUIT BOARD SECTION ===

REF. NO.	PART NO.	DESCRIPTION
SW901	87-036-186-010	TACT SW(POWER)

=== RELAY CIRCUIT BOARD-1 SECTION ===

=== RELAY CIRCUIT BOARD-2 SECTION ===

=== RELAY CIRCUIT BOARD-3 SECTION ===

=== RELAY CIRCUIT BOARD-4 SECTION ===

=== BASE CIRCUIT BOARD SECTION ===

REF. NO.	PART NO.	DESCRIPTION
PCB-K	★S8-059-133-020	BASE PCB ASSY(W/MODE SW)

REF. NO.	PART NO.	DESCRIPTION
CP1	S6-808-080-030	PHOTO(REEL) SENSOR ON1385

=== RELAY CIRCUIT BOARD-5 SECTION ===

REF. NO.	PART NO.	DESCRIPTION
PCB-L	★S8-059-013-470	RELAY PCB-5 ASSY

=== RELAY CIRCUIT BOARD-6 SECTION ===

REF. NO.	PART NO.	DESCRIPTION
PCB-M	★S8-059-013-050	RELAY PCB-6 ASSY

=== SWITCH CIRCUIT BOARD SECTION ===

REF. NO.	PART NO.	DESCRIPTION
PCB-N	★S8-059-163-200	SWITCH PCB ASSY(W/SW1, 2, 3)

=== START CIRCUIT BOARD SECTION ===

REF. NO.	PART NO.	DESCRIPTION
PCB-O	★S8-059-163-010	SENSOR PCB RM ASSY

=== END SENSOR CIRCUIT BOARD SECTION ===

REF. NO.	PART NO.	DESCRIPTION
PCB-P	★S8-059-163-010	SENSOR PCB LM ASSY

=== LED CIRCUIT BOARD SECTION ===

REF. NO.	PART NO.	DESCRIPTION
LED1	★S8-059-133-030	LED ASSY(W/PCB-Q)

=== ACE HEAD CIRCUIT BOARD SECTION ===

REF. NO.	PART NO.	DESCRIPTION
ACEH	S6-204-150-080	ACE HEAD HV224206(W/PCB-R)

=== ERASE CIRCUIT BOARD SECTION ===

REF. NO.	PART NO.	DESCRIPTION
FEH	S6-204-150-030	FULL ERASE HEAD(W/PCB-S)

=== POWER CIRCUIT BOARD-1 SECTION ===

REF. NO.	PART NO.	DESCRIPTION
⚠C101	★S0-05C-001-010	CAP, FILM 0.22-250V
⚠F101	S0-05F-001-010	FUSE, 1.6A 250V
⚠J101	S1-9A0-INL-ETO	AC JACK(AC)
⚠L101	★S5-EVL-001-010	COIL, 33MMH 0.3A

=== POWER CIRCUIT BOARD-2 SECTION ===

REF. NO.	PART NO.	DESCRIPTION
C102-1	★S0-5EC-010-210	CAP, CERA 4700P-250V
C102-2	★S0-5EC-010-210	CAP, CERA 4700P-250V
C102-3	★S0-5EC-010-210	CAP, CERA 4700P-250V
C103	★S0-05C-001-030	CAP, FILM 0.033-50
C104	★S1-9A0-C01-040	CAP, ELECT 100-400V
C105	★S0-05C-001-050	CAP, FILM 0.047-630V
C106	★S0-05C-001-060	CAP, CERA 100P-1KV
C107	★S0-05C-001-070	CAP, ELECT 1-400V
C201	★S0-05C-002-010	CAP, ELECT 0.047-50V
C202	★87-010-029-010	CAP, ELECT 1-50V
C203	★S0-05C-002-030	CAP, ELECT 680-25V
C204	★87-010-002-010	CAP, ELECT 470-25V
C205	★S0-05C-002-030	CAP, ELECT 680-25V
C206	★S0-05C-002-060	CAP, ELECT 1000-10V
C207	★87-010-002-010	CAP, ELECT 470-25V
C208	★87-010-622-010	CAP, ELECT 470-16V
C210	★87-010-263-010	CAP, ELECT 100-10V
C211	★87-010-263-010	CAP, ELECT 100-10V
L201	★S0-05L-002-010	COIL, 40UH 1A
L202	★S0-05L-002-010	COIL, 40UH 1A
PC101	S0-05P-C01-010	PHOTO COUPLER ON3171R
R101	S0-05R-001-010	RES, WIRE WOUND 2.2 3W
R102	S0-05R-001-020	RES, MF 47K 3W
R105	S0-05R-001-050	RES, MFO 27 1W
R105-1	S9-EVR-000-040	RES, MFO 56 1W
R105-2	S9-EVR-000-040	RES, MFO 56 1W
R106-1	87-025-079-010	RES, MFO 100 1W
R106-2	87-025-079-010	RES, MFO 100 1W
⚠R107	S1-9A0-R02-100	RES, FUSE 150 1/2W
R203	87-025-306-010	RES, MF 5.6K 1/4W
R205	87-025-307-010	RES, MF 1.5K 1/4W
R214	87-025-245-010	RES, MFO 820 1W
SFR210	★S0-05R-V20-010	SFR, 500
T101	S1-9A0-T01-010	TRANSFORMER T19A0

=== POWER CIRCUIT BOARD-3 SECTION ===

REF. NO.	PART NO.	DESCRIPTION
C301	★87-010-050-010	CAP, ELECT 470-25V
C303	★S0-05C-002-010	CAP, ELECT 0.047-50V
C304	★S0-05C-002-010	CAP, ELECT 0.047-50V
C305	★87-010-635-010	CAP, ELECT 33-63V
C306	★87-010-635-010	CAP, ELECT 33-63V
C307	★S0-05C-003-030	CAP, FILM 0.01-50V
C308	★S0-05C-003-030	CAP, FILM 0.01-50V
C309	★S0-05C-003-030	CAP, FILM 0.01-50V
R302	★S0-05R-003-020	RES, NF 150 1/2W
R305	★S0-05R-003-050	RES, NF 12 1/2W
T301	★S0-05T-003-010	TRANSFORMER F5M-89057

=== POWER CIRCUIT BOARD-4 SECTION ===

REF. NO.	PART NO.	DESCRIPTION
C103-1	★S0-5EC-010-210	CAP, CERA 4700P-250V
C103-2	★S0-5EC-010-210	CAP, CERA 4700P-250V
C103-3	★S0-5EC-010-210	CAP, CERA 4700P-250V

=== PRE AMP CIRCUIT BOARD SECTION(G70SE) ===

REF. NO.	PART NO.	DESCRIPTION
C601	★87-010-248-010	CAP, ELECT 220-10 SME
C602	★87-018-205-010	CAP, CERA-SOL SS 0.022-25 F
C603	★87-010-260-010	CAP, ELECT 47-25 SME
C604	★87-018-205-010	CAP, CERA-SOL SS 0.022-25 F
C606	★87-018-213-010	CAP, CERA-SOL SS 0.047-50 F
C610	★87-018-205-010	CAP, CERA-SOL SS 0.022-25 F
C611	★87-018-205-010	CAP, CERA-SOL SS 0.022-25 F
C612	★87-015-695-010	CAP, ELECT 1-50
C613	★87-018-205-010	CAP, CERA-SOL SS 0.022-25 F
C614	★87-018-205-010	CAP, CERA-SOL SS 0.022-25 F
C615	★87-018-205-010	CAP, CERA-SOL SS 0.022-25 F
C616	★87-018-205-010	CAP, CERA-SOL SS 0.022-25 F
C617	★87-018-205-010	CAP, CERA-SOL SS 0.022-25 F
C618	★87-018-205-010	CAP, CERA-SOL SS 0.022-25 F
C630	★87-018-205-010	CAP, CERA-SOL SS 0.022-25 F
C631	★87-018-115-010	CAP, CERA-SOL SS 47P-50 SL
C632	★87-018-120-010	CAP, CERA-SOL SS 120P-50 B
C633	★87-018-205-010	CAP, CERA-SOL SS 0.022-25 F
C634	★87-018-205-010	CAP, CERA-SOL SS 0.022-25 F
C636	★87-018-120-010	CAP, CERA-SOL SS 120P-50 B
C637	★87-018-125-010	CAP, CERA-SOL SS 330P-50 B
L601	★87-005-432-010	COIL, 10UH
L602	★87-005-444-010	COIL, 100UH
L630	★87-003-149-010	COIL, 47UH
L631	★87-003-403-010	COIL, 5.6UH LAL02
L633	★87-003-146-010	COIL, 15UH LAL02
L634	★87-003-288-010	COIL, 180UH LAL02

=== POWER CIRCUIT BOARD-5 SECTION(G70SE) ===

REF. NO.	PART NO.	DESCRIPTION
⚠	87-033-213-010	CLAMP, FUSE SMK
⚠F101	87-035-360-010	FUSE, 630MA 250V
⚠FL101	★87-003-296-010	FILTER, LINE PLA2230R4C
⚠J101	★87-009-329-010	AC JACK(AC)

=== POWER CIRCUIT BOARD-6 SECTION(G70SE) ===

REF. NO.	PART NO.	DESCRIPTION
⚠	87-033-213-010	CLAMP, FUSE SMK
C101	★87-010-399-010	CAP, ELECT 3300-35V SME
C102	★87-010-387-010	CAP, ELECT 470-25V SME
C103	★87-010-878-010	CAP, ELECT 6800-16V

REF. NO.	PART NO.	DESCRIPTION
C104	★87-010-263-010	CAP, ELECT 100-10V
C105	★87-010-430-010	CAP, ELECT 100-63V
C106	★87-010-430-010	CAP, ELECT 100-63V
C107	★87-010-236-010	CAP, ELECT 1000-10V
C110	★87-010-393-010	CAP, ELECT 100-35V SME
C111	★87-010-408-010	CAP, ELECT 47-50V SME
C112	★87-010-405-010	CAP, ELECT 10-50V SME
C113	★87-010-221-010	CAP, ELECT 470-10V
C114	★87-010-265-010	CAP, ELECT 33-16V SME
C115	★87-010-387-010	CAP, ELECT 470-25V SME
C116	★87-018-209-010	CAP, CERA-SOL SS 0.1-50V
⚠F102	★87-035-365-010	FUSE, 2A 250V
⚠F103	★87-035-365-010	FUSE, 2A 250V
⚠R103	★87-029-374-010	RES, FUSE 47 1/4W
⚠R104	★87-029-119-010	RES, FUSE 100 1/4W
⚠R105	★87-029-070-010	RES, FUSE 2.2 1/4W
R110	87-025-463-010	RES, MF 56K 1/4W
R111	87-025-460-010	RES, MF 3.9K 1/4W
R114	87-025-459-010	RES, MF 5K 1/4W
R115	87-025-460-010	RES, MF 3.9K 1/4W
T101	81-JU6-629-010	TRANSFORMER K 240V

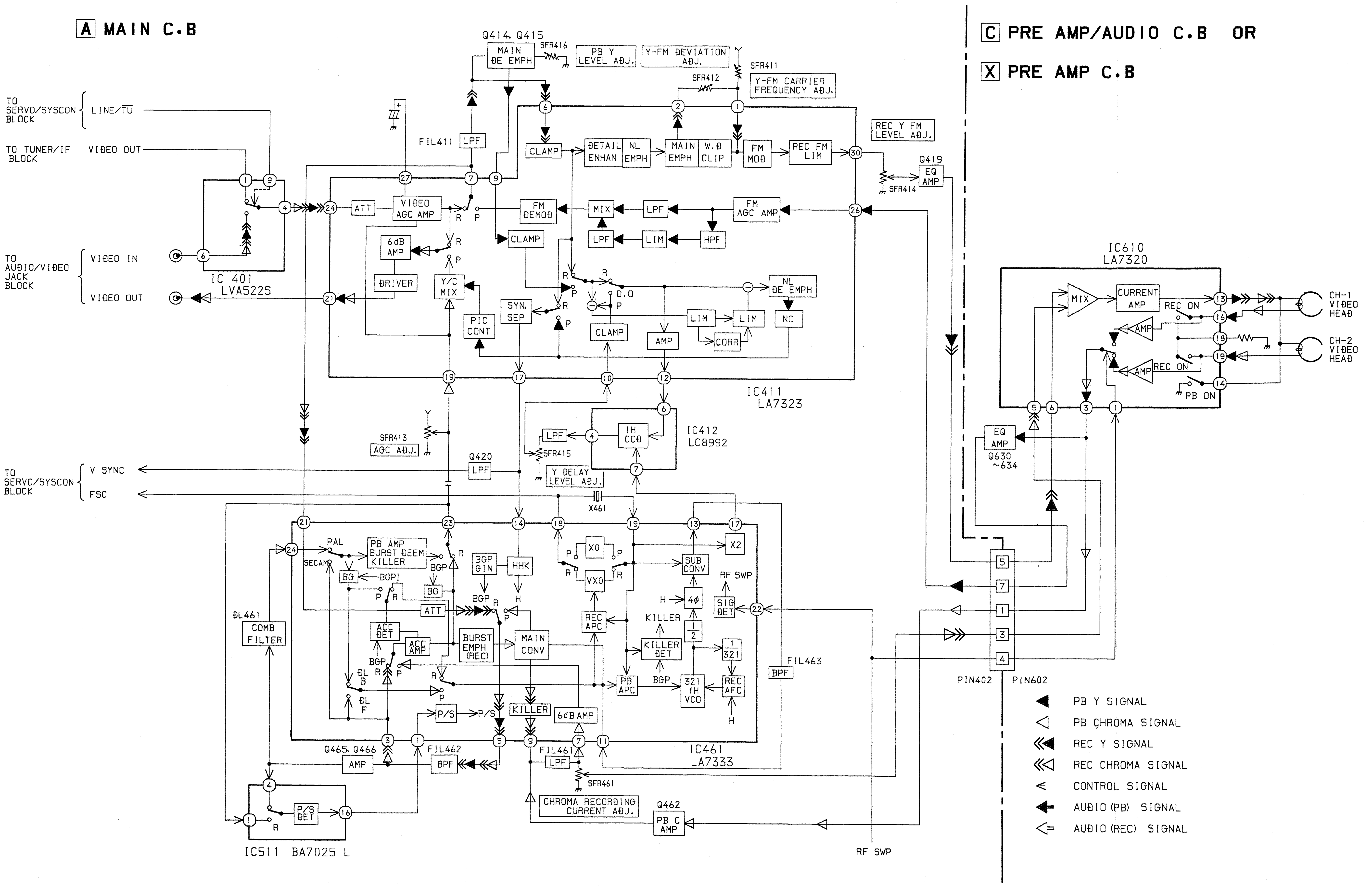
=== AUDIO CIRCUIT BOARD SECTION(G70SE) ===

REF. NO.	PART NO.	DESCRIPTION
C702	★87-018-123-010	CAP, CERA-SOL SS 220P-50 B
C703	★87-010-380-010	CAP, ELECT 47-16
C704	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C705	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C706	★87-015-687-010	CAP, ELECT 33-25
C707	★87-010-384-010	CAP, ELECT 100-25 SME
C708	★87-018-205-010	CAP, CERA-SOL SS 0.022-25 F
C709	★87-010-403-010	CAP, ELECT 3.3-50 SME
C710	★87-010-404-010	CAP, ELECT 4.7-50 SME
C712	★87-010-402-010	CAP, ELECT 2.2-50 SME
C717	★87-018-197-010	CAP, CERA-SOL SS 1800P-16 X
C718	★87-010-404-010	CAP, ELECT 4.7-50 SME
C719	★87-018-119-010	CAP, CERA-SOL SS 100P-50 B
C720	★87-010-382-010	CAP, ELECT 22-25 SME
C722	87-018-133-010	CAP, CERA-SOL SS 4700P-16 X
C723	★87-015-695-010	CAP, ELECT 1-50
C724	★87-018-131-010	CAP, CERA-SOL SS 1000P-50 B
C725	★87-015-374-010	CAP, ELECT 47-10
C726	★87-015-695-010	CAP, ELECT 1-50
C727	★87-018-214-010	CAP, CERA-SOL SS 0.1-50 F
C732	★87-018-214-010	CAP, CERA-SOL SS 0.1-50 F
C734	★87-018-133-010	CAP, CERA-SOL SS 4700P-16 X
L701	★89-JU8-609-010	COIL, 18MMH
L702	★87-003-152-010	COIL, 100UH
T701	★89-JU8-610-010	COIL, OSC BIAS-70K

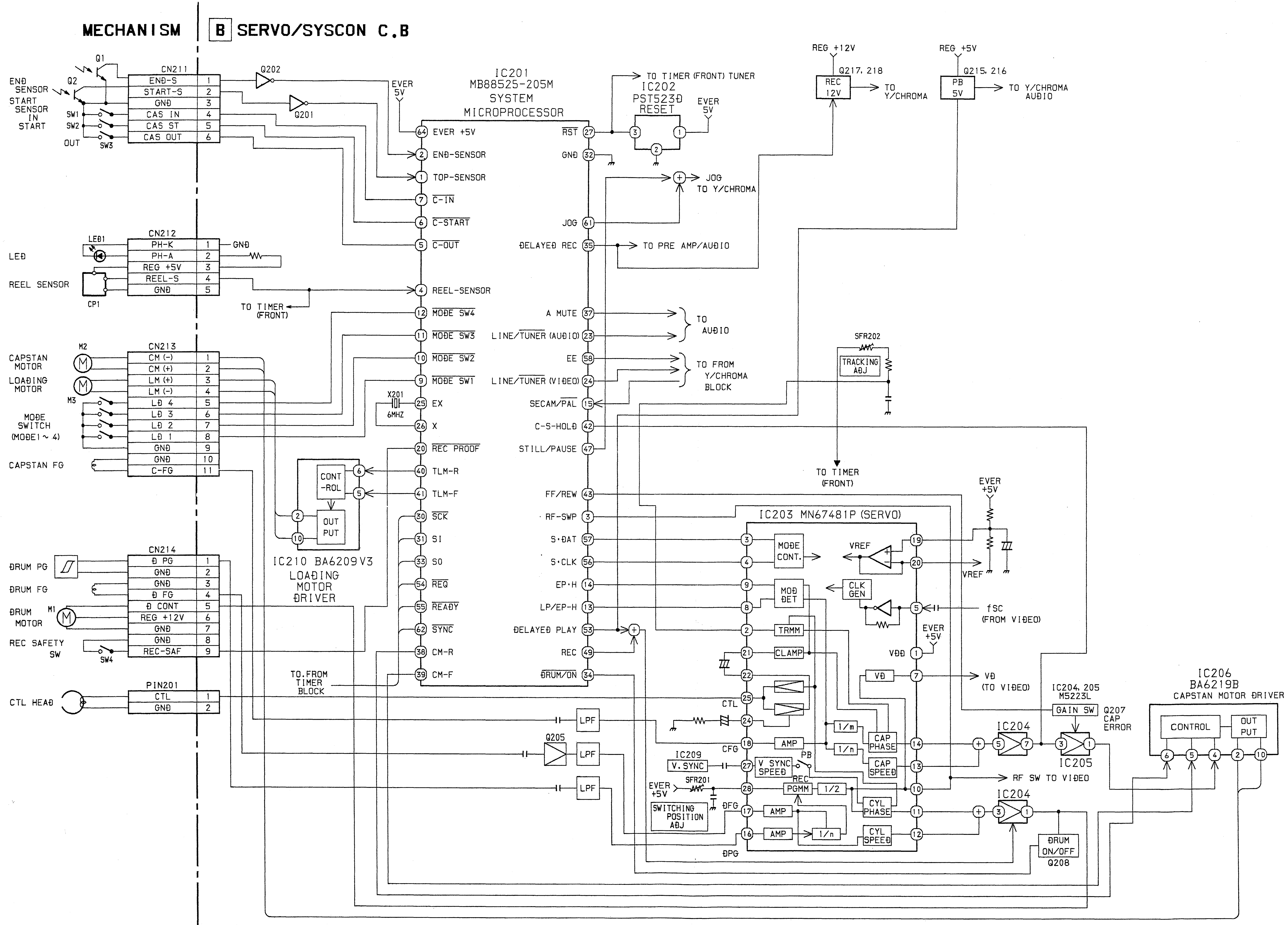
=== MISCELLANEOUS ===

REF. NO.	PART NO.	DESCRIPTION
	S8-059-010-160	UPPER DRUM(W/VIDEO HEAD)
DS1	★S6-808-080-040	DEW SENSOR EYH-S10R
M1	S6-004-090-010	CYLINDER MOTOR TM82
M2	S8-059-073-020	CAPSTAN MOTOR ASSY
M3	S8-059-113-010	LOADING MOTOR ASSY
SW4	S6-401-011-510	LEAF SW(REC SAFETY)

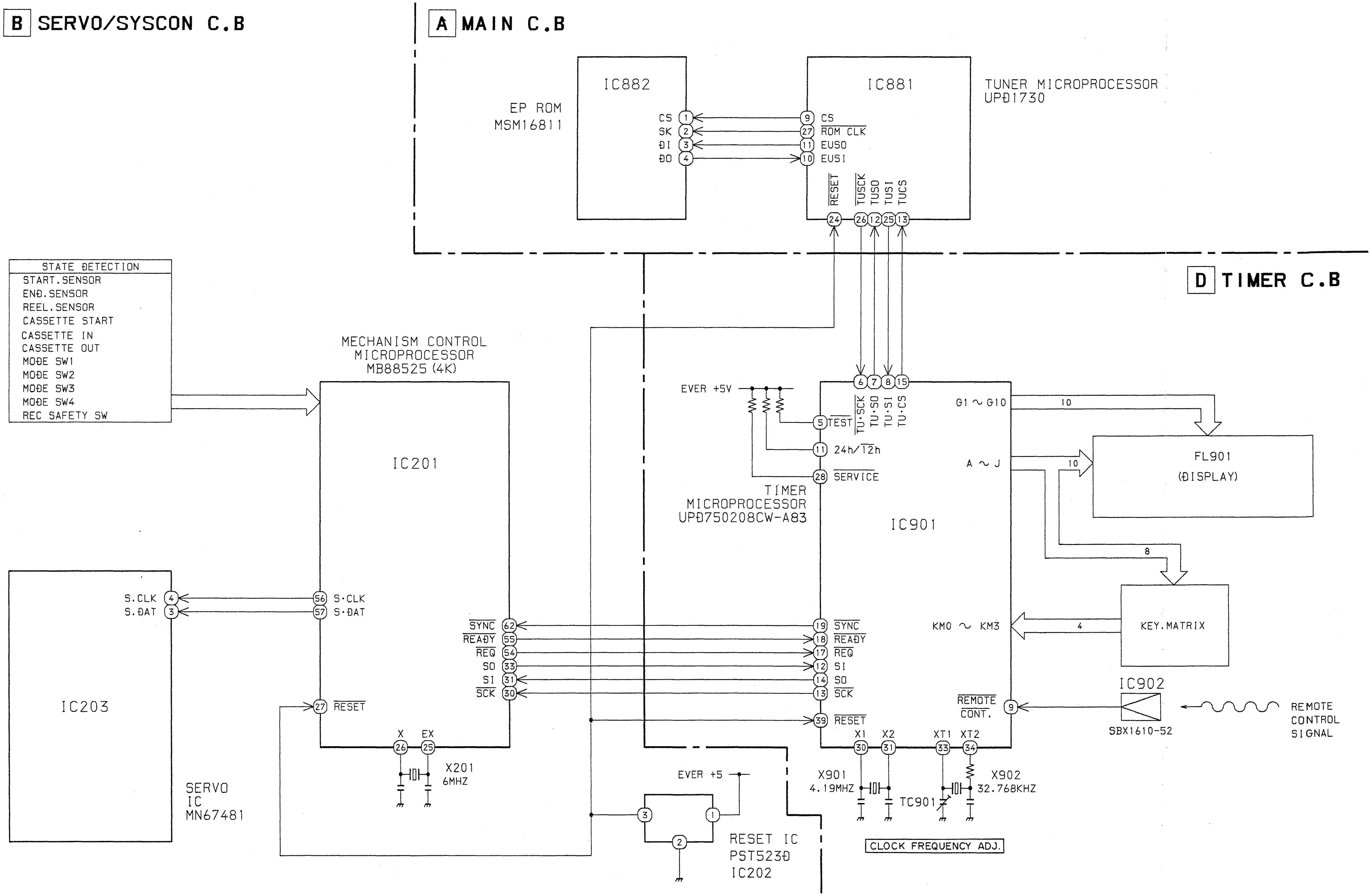
BLOCK DIAGRAM – 1 (VIDEO SECTION)


A MAIN C.B
C PRE AMP/AUDIO C.B OR
X PRE AMP C.B
TO SERVO/SYSCON BLOCK
LINE/TU
TO TUNER/IF BLOCK
VIDEO OUT
TO AUDIO/VIDEO JACK BLOCK
VIDEO IN
VIDEO OUT
IC 401 LVA522S
Q414, Q415
MAIN DE EMPH
SFR416
PB Y LEVEL ADJ.
Y-FM DEVIATION ADJ.
SFR411
SFR412
Y-FM CARRIER FREQUENCY ADJ.
FIL411
LPF
CLAMP
DETAIL ENHAN
NL EMPH
MAIN EMPH
W.D CLIP
FM MOD
REC FM LIM
REC Y FM LEVEL ADJ.
Q419
EQ AMP
SFR414
ATT
VIDEO AGC AMP
FM DEMOD
MIX
LPF
FM AGC AMP
6dB AMP
CLAMP
LPF
LIM
HPF
DRIVER
Y/C MIX
NL DE EMPH
D.O
SYN, SEP
PIC CONT
CLAMP
LIM
LIM
NC
AMP
CORR
IC411 LA7323
IC610 LA7320
MIX
CURRENT AMP
REC ON
AMP
AMP
REC ON
PB ON
CH-1 VIDEO HEAD
CH-2 VIDEO HEAD
SFR413
AGC ADJ.
Q420
LPF
IH CCD
IC412 LC8992
SFR415
Y DELAY LEVEL ADJ.
TO SERVO/SYSCON BLOCK
V SYNC
FSC
X461
EQ AMP
Q630 ~634
PAL
SECAM
PB AMP BURST DEEM KILLER
BG
BGPI
BGP
BGP GIN
HHK
XO
VXO
X2
SUB CONV
RF SWP
4φ
SIG DET
H
KILLER
1/2
REC APC
KILLER DET
1/321
ATT
BURST EMPH (REC)
MAIN CONV
ACC DET
ACC AMP
DL461
COMB FILTER
DL B
DL F
P/S
PB APC
BGP
321 fH VCO
REC AFC
KILLER
6dB AMP
FIL463
BPF
PIN402
PIN602
Q465, Q466
AMP
FIL462
BPF
FIL461
LPF
SFR461
IC461 LA7333
CHROMA RECORDING CURRENT ADJ.
Q462
PB C AMP
P/S DET
IC511 BA7025 L
RF SWP
◀ PB Y SIGNAL
◁ PB CHROMA SIGNAL
REC Y SIGNAL
REC CHROMA SIGNAL
CONTROL SIGNAL
AUDIO (PB) SIGNAL
AUDIO (REC) SIGNAL

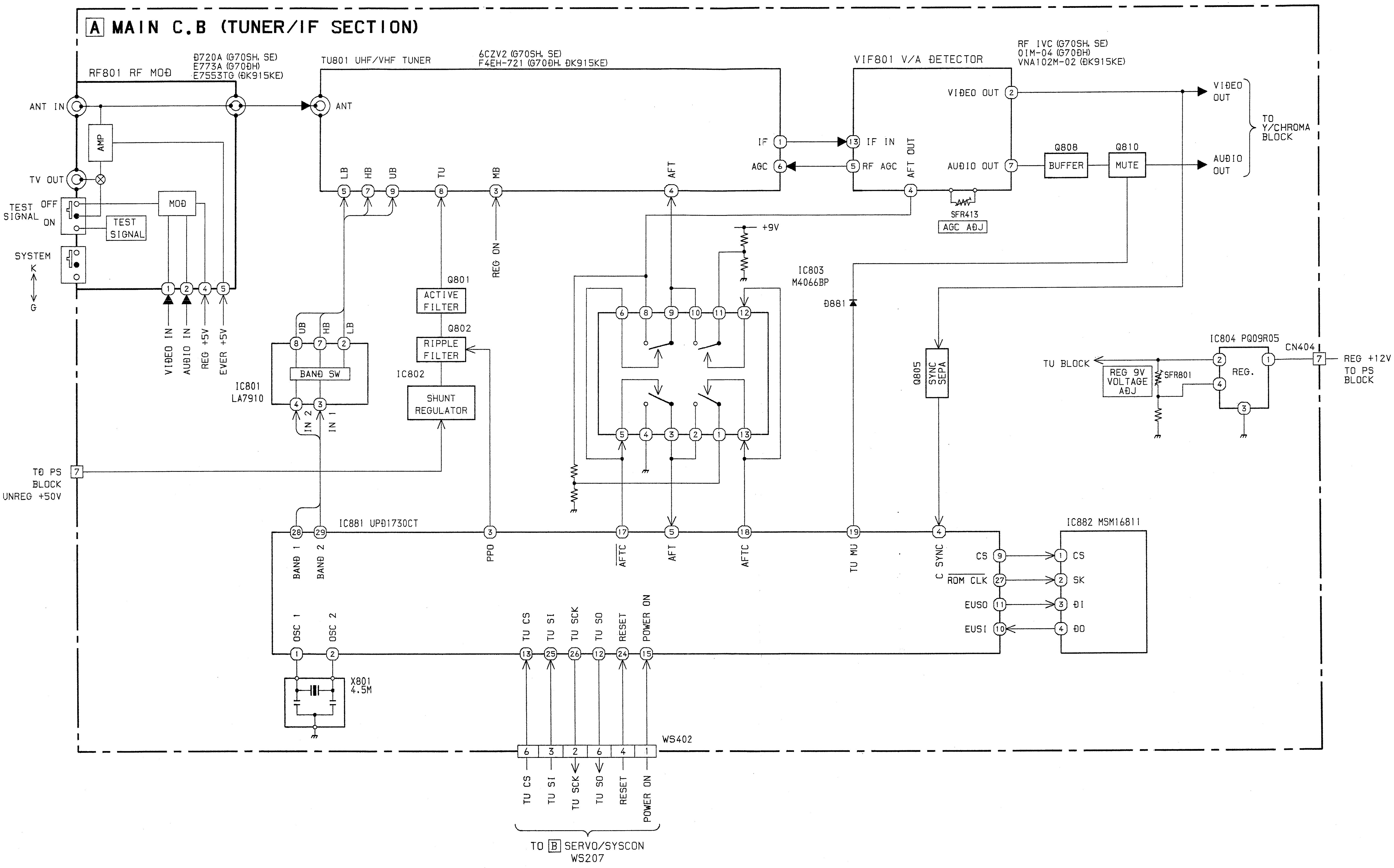
BLOCK DIAGRAM – 2 (SERVO/SYSTEM CONTROL SECTION)


MECHANISM
B SERVO/SYSCON C.B
END SENSOR
START SENSOR
IN START
OUT
Q1
Q2
SW1
SW2
SW3
CN211
END-S 1
START-S 2
GND 3
CAS IN 4
CAS ST 5
CAS OUT 6
Q202
Q201
EVER 5V
IC201 MB88525-205M SYSTEM MICROPROCESSOR
64 EVER +5V
2 END-SENSOR
1 TOP-SENSOR
7 C-IN
6 C-START
5 C-OUT
4 REEL-SENSOR
12 MODE SW4
11 MODE SW3
10 MODE SW2
9 MODE SW1
25 EX
26 X
X201 6MHZ
20 REC PROOF
40 TLM-R
41 TLM-F
30 SCK
31 SI
33 SO
54 REQ
55 READY
62 SYNC
38 CM-R
39 CM-F
RST 27
GND 32
JOG 61
DELAYED REC 35
A MUTE 37
LINE/TUNER (AUDIO) 23
EE 58
LINE/TUNER (VIDEO) 24
SECAM/PAL 15
C-S-HOLD 42
STILL/PAUSE 47
FF/REW 43
RF-SWP 3
S·DAT 57
S·CLK 56
EP·H 14
LP/EP-H 13
DELAYED PLAY 53
REC 49
DRUM/ON 34
TO TIMER (FRONT) TUNER
IC202 PST523D RESET
EVER 5V
JOG TO Y/CHROMA
TO PRE AMP/AUDIO
TO AUDIO
TO FROM Y/CHROMA BLOCK
REG +12V
Q217, 218
REC 12V
TO Y/CHROMA
REG +5V
Q215, 216
PB 5V
TO Y/CHROMA AUDIO
SFR202
TRACKING ADJ
TO TIMER (FRONT)
LED
LED1
CN212
PH-K 1
PH-A 2
REG +5V 3
REEL-S 4
GND 5
GND
REEL SENSOR
CP1
TO TIMER (FRONT)
CAPSTAN MOTOR
M2
LOADING MOTOR
M3
MODE SWITCH (MODE1 ~ 4)
CAPSTAN FG
CN213
CM (-) 1
CM (+) 2
LM (+) 3
LM (-) 4
LD 4 5
LD 3 6
LD 2 7
LD 1 8
GND 9
GND 10
C-FG 11
CONT -ROL
OUT PUT
IC210 BA6209V3 LOADING MOTOR DRIVER
DRUM PG
DRUM FG
DRUM MOTOR
M1
REC SAFETY SW
SW4
CN214
D PG 1
GND 2
GND 3
D FG 4
D CONT 5
REG +12V 6
GND 7
GND 8
REC-SAF 9
CTL HEAD
PIN201
CTL 1
GND 2
TO.FROM TIMER BLOCK
LPF
Q205
IC203 MN67481P (SERVO)
MODE CONT.
MOD DET
CLK GEN
VREF
TRMM
CLAMP
VD
CTL
CFG
AMP
1/m
1/n
CAP PHASE
CAP SPEED
IC209 V.SYNC
V SYNC SPEED
PB
REC
EVER +5V
SFR201
PGMM
1/2
SWITCHING POSITION ADJ
DFG
DPG
CYL PHASE
CYL SPEED
EVER +5V
fSC (FROM VIDEO)
VDD
VD (TO VIDEO)
RF SW TO VIDEO
IC204, 205 M5223L
GAIN SW
Q207 CAP ERROR
IC204
IC205
DRUM ON/OFF Q208
IC206 BA6219B CAPSTAN MOTOR DRIVER
CONTROL
OUT PUT

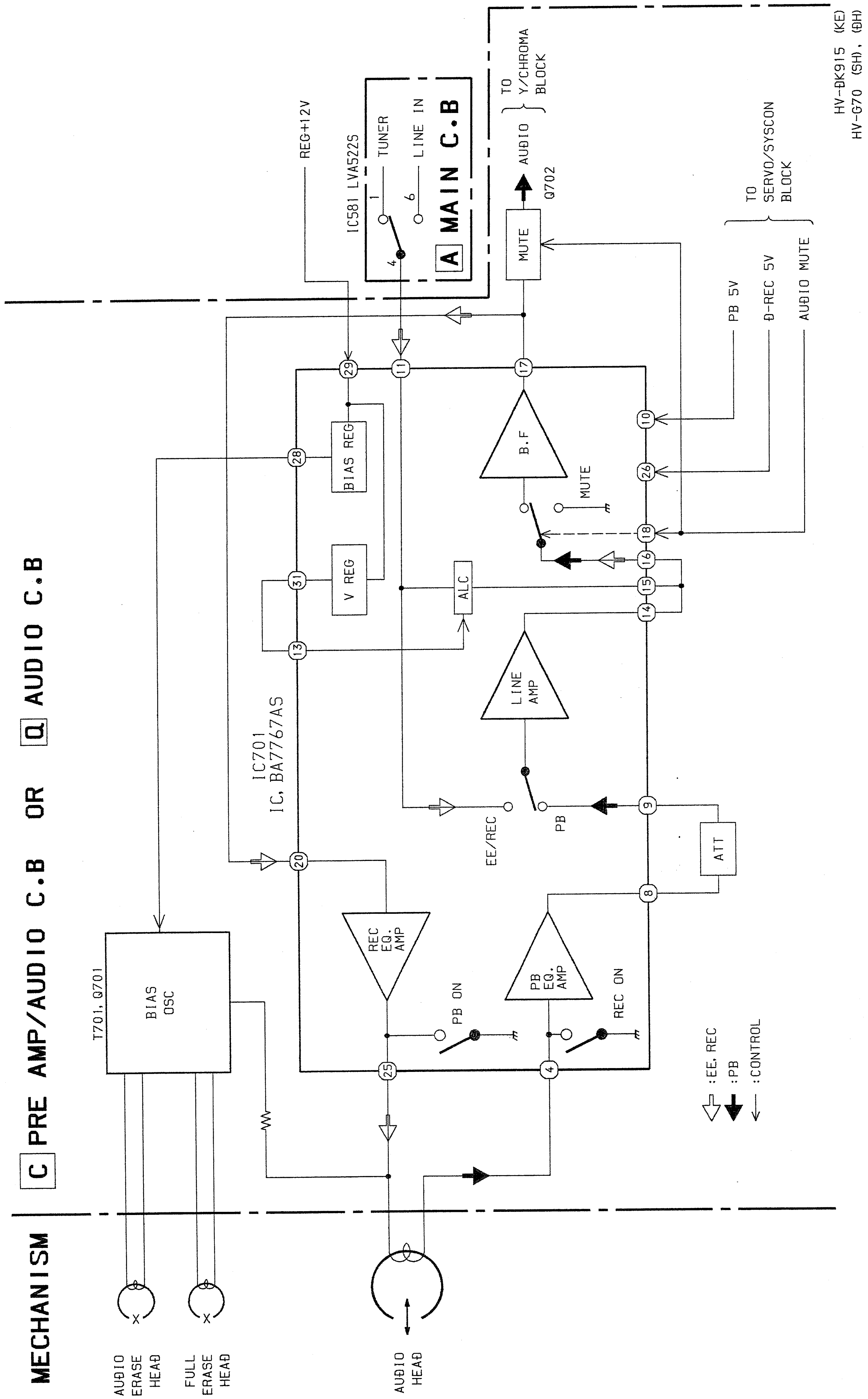
BLOCK DIAGRAM – 3 (SYSTEM CONTROL SECTION)


B SERVO/SYSCON C.B
A MAIN C.B
D TIMER C.B
IC882
EP ROM
MSM16811
CS 1
SK 2
DI 3
DO 4
IC881
TUNER MICROPROCESSOR
UPD1730
9 CS
27 ROM CLK
11 EUSO
10 EUSI
24 RESET
26 TUSCK
12 TUSO
25 TUSI
13 TUCS
STATE DETECTION
START.SENSOR
END.SENSOR
REEL.SENSOR
CASSETTE START
CASSETTE IN
CASSETTE OUT
MODE SW1
MODE SW2
MODE SW3
MODE SW4
REC SAFETY SW
MECHANISM CONTROL
MICROPROCESSOR
MB88525 (4K)
IC201
56 S·CLK
57 S·DAT
SYNC 62
READY 55
REQ 54
SO 33
SI 31
SCK 30
27 RESET
X 26
EX 25
X201
6MHZ
IC203
S.CLK 4
S.DAT 3
SERVO
IC
MN67481
EVER +5V
5 TEST
11 24h/12h
28 SERVICE
TIMER
MICROPROCESSOR
UPD750208CW-A83
IC901
6 TU·SCK
7 TU·SO
8 TU·SI
15 TU·CS
G1 ~ G10
10
A ~ J
10
8
FL901
(DISPLAY)
KEY.MATRIX
KM0 ~ KM3
4
19 SYNC
18 READY
17 REQ
12 SI
14 SO
13 SCK
39 RESET
REMOTE
CONT. 9
IC902
SBX1610-52
REMOTE
CONTROL
SIGNAL
X1 30
X2 31
XT1 33
XT2 34
X901
4.19MHZ
TC901
X902
32.768KHZ
CLOCK FREQUENCY ADJ.
EVER +5
3
1
2
RESET IC
PST523D
IC202

BLOCK DIAGRAM – 4 (TUNER SECTION)

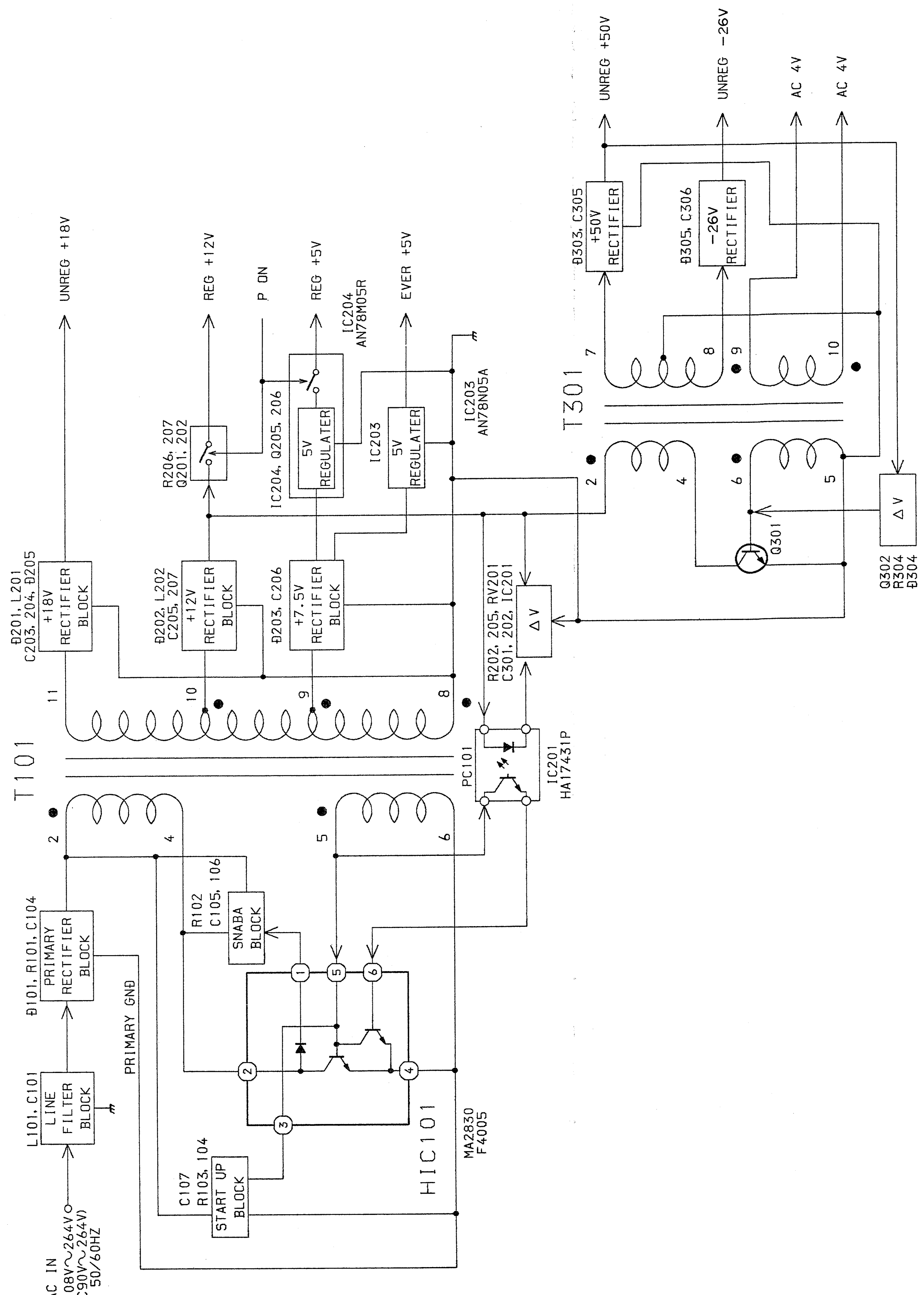

A MAIN C.B (TUNER/IF SECTION)
RF801 RF MOD
D720A (G70SH, SE)
E773A (G70DH)
E7553TG (DK915KE)
ANT IN
AMP
TV OUT
TEST SIGNAL
OFF
ON
MOD
TEST SIGNAL
SYSTEM
K
G
VIDEO IN
AUDIO IN
REG +5V
EVER +5V
TU801 UHF/VHF TUNER
6CZV2 (G70SH, SE)
F4EH-721 (G70DH, DK915KE)
ANT
LB
HB
UB
TU
MB
AFT
IF
AGC
REG ON
Q801
ACTIVE FILTER
Q802
RIPPLE FILTER
IC802
SHUNT REGULATOR
BAND SW
IC801
LA7910
IN 2
IN 1
TO PS BLOCK
UNREG +50V
+9V
IC803
M4066BP
D881
VIF801 V/A DETECTOR
RF IVC (G70SH, SE)
0IM-04 (G70DH)
VNA102M-02 (DK915KE)
VIDEO OUT
IF IN
RF AGC
AFT OUT
AUDIO OUT
SFR413
AGC ADJ
Q808
BUFFER
Q810
MUTE
VIDEO OUT
AUDIO OUT
TO Y/CHROMA BLOCK
Q805
SYNC SEPA
IC804 PQ09R05
CN404
REG +12V
TO PS BLOCK
TU BLOCK
REG 9V VOLTAGE ADJ
SFR801
REG.
IC881 UPD1730CT
BAND 1
BAND 2
PPO
AFTC
AFT
AFTC
TU MU
C SYNC
CS
ROM CLK
EUSO
EUSI
IC882 MSM16811
CS
SK
DI
DO
OSC 1
OSC 2
X801
4.5M
TU CS
TU SI
TU SCK
TU SO
RESET
POWER ON
WS402
TO B SERVO/SYSCON
WS207

BLOCK DIAGRAM－5 (AUDIO SECTION)

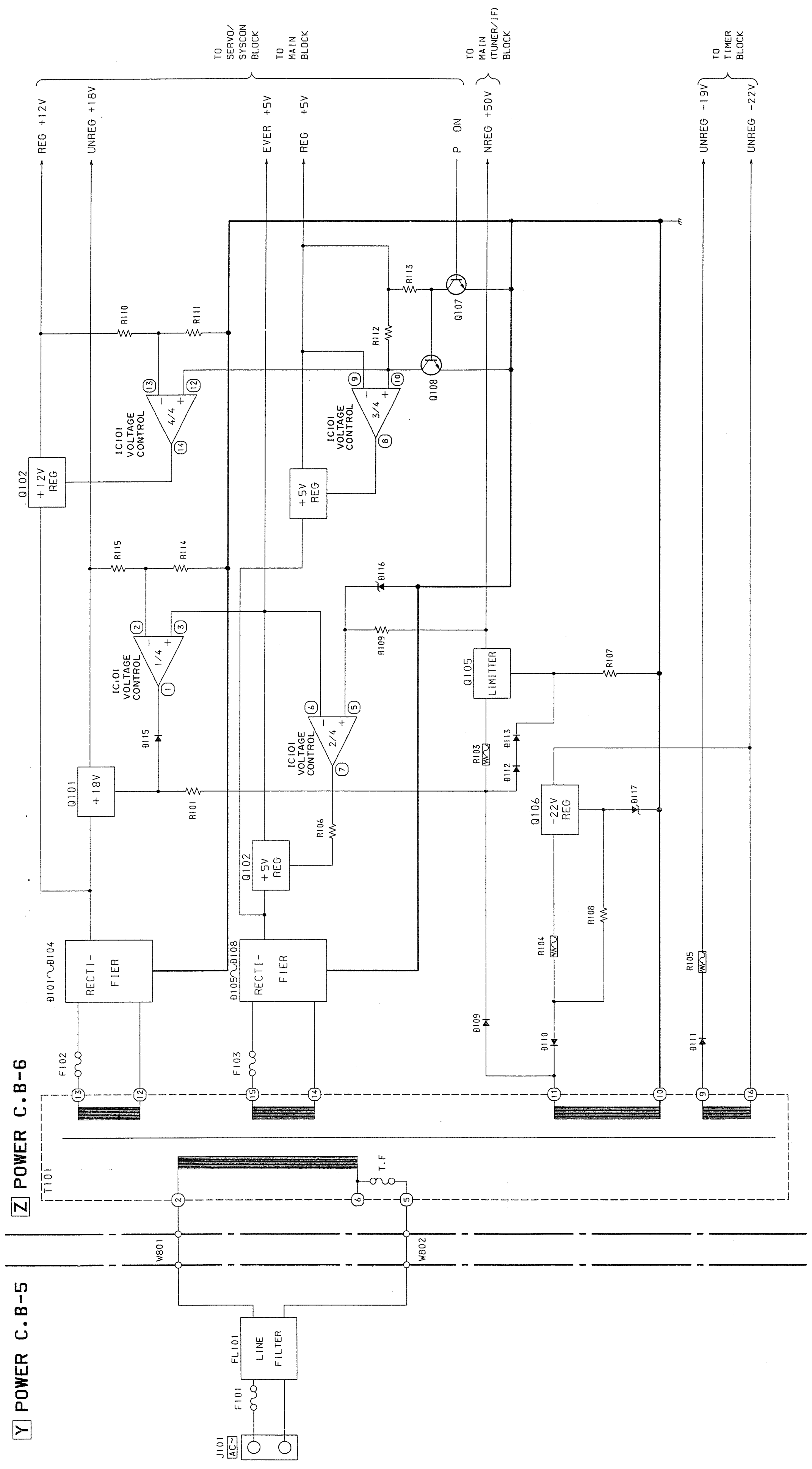

C PRE AMP/AUDIO C.B OR Q AUDIO C.B
MECHANISM
A MAIN C.B
IC581 LVA5225
1 TUNER
6 LINE IN
4
REG+12V
TO Y/CHROMA BLOCK
AUDIO
Q702
MUTE
HV-DK915 (KE)
HV-G70 (SH), (DH)
TO SERVO/SYSCON BLOCK
PB 5V
D-REC 5V
AUDIO MUTE
29
11
17
10
26
18
16
15
14
28
31
13
20
9
8
25
4
BIAS REG
V REG
ALC
B.F
MUTE
LINE AMP
IC701
IC, BA7767AS
EE/REC
PB
ATT
REC EQ. AMP
PB EQ. AMP
PB ON
REC ON
BIAS OSC
T701, Q701
:EE, REC
:PB
:CONTROL
AUDIO ERASE HEAD
FULL ERASE HEAD
AUDIO HEAD

BLOCK DIAGRAM－6 (POWER UNIT－1 SECTION)

※ USE TO POWER UNIT－1


UNREG +18V
REG +12V
P ON
REG +5V
IC204 AN78M05R
EVER +5V
UNREG +50V
UNREG -26V
AC 4V
AC 4V
D303, C305
+50V RECTIFIER
D305, C306
-26V RECTIFIER
T301
7
8
9
10
2
4
6
5
R206, 207
Q201, 202
IC204, Q205, 206
5V REGULATER
IC203
5V REGULATER
IC203 AN78N05A
Q301
ΔV
Q302 R304 D304
D201, L201
C203, 204, D205
+18V RECTIFIER BLOCK
D202, L202
C205, 207
+12V RECTIFIER BLOCK
D203, C206
+7.5V RECTIFIER BLOCK
R202, 205, RV201
C301, 202, IC201
ΔV
T101
11
10
9
8
PC101
IC201 HA17431P
2
4
5
6
D101, R101, C104
PRIMARY RECTIFIER BLOCK
R102
C105, 106
SNABA BLOCK
1
5
6
2
4
3
HIC101
MA2830 F4005
PRIMARY GND
L101, C101
LINE FILTER BLOCK
C107
R103, 104
START UP BLOCK
AC IN
AC108V~264V
(AC90V~264V)
50/60HZ

BLOCK DIAGRAM − 7 (POWER UNIT − 2 SECTION)
※ USE TO POWER UNIT − 2


TO SERVO/ SYSCON BLOCK
TO MAIN BLOCK
TO MAIN (TUNER/IF) BLOCK
TO TIMER BLOCK
REG +12V
UNREG +18V
EVER +5V
REG +5V
P ON
NREG +50V
UNREG -19V
UNREG -22V
R110
R111
R112
R113
Q107
Q108
IC101 VOLTAGE CONTROL
4/4
3/4
1/4
2/4
Q102 +12V REG
+5V REG
R115
R114
D116
R109
Q105 LIMITTER
R107
D115
R103
D113
D112
Q101 +18V
R101
R106
Q102 +5V REG
Q106 -22V REG
D117
R108
D101∼D104 RECTI-FIER
D105∼D108 RECTI-FIER
R104
R105
D109
D110
D111
F102
F103
Z POWER C.B-6
T101
T.F
W801
W802
Y POWER C.B-5
FL101 LINE FILTER
F101
J101 AC~

PRACTICAL SERVICE FIGURE

Output Level

Video (Impedance) : 1.0 ± 0.2Vp − p
(75 Ω ± 20 %, Unbalance)
Audio (Impedance) : − 8 ± 3dB (Less then 3.3k Ω)
RF Modulated (Impedance) : 75 ± 3dB μ V (75 Ω, Unbalance)

Input Level

Video (Impedance) : 0.5V∼2.0V ± 0.5Vp − p
(75 Ω ± 20 %, Unbalance)
Audio (Impedance) : − 10 ± 3dB (More than 47k Ω)

TV channels received

Destination	VHF Low	VHF High	UHF	Signal format	
				VHF	UHF
G70SH	I1∼E4	E5∼E12	21∼69	B	G
				VIF 38.9MHz, SIF 33.4MHz	
G70DH	C1∼C5	C6∼C12	13∼57	D	K
				VIF 38.0MHz, SIF 31.5MHz	
	E2∼E4	E5∼E12	21∼69	–	I
				VIF 38.0MHz, SIF 32.0MHz	
G70SE	I1∼E4	E5∼E12	21∼69	B	G
				VIF 38.9MHz, SIF 33.4MHz	
DK915KE	E2∼E4	E5∼E12	21∼69	B	G
				VIF 38.9MHz, SIF 33.4MHz	
	R1∼R5	R6∼R12	21∼69	D	K
				VIF 38.0MHz, SIF 31.5MHz	

Tuner AGC : 72 ± 3dB (VHF, UHF)

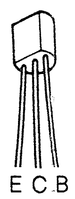
S/N Ratio

Video (SP mode) : [Test tape MVP − 08 (PB),
MVP − 09 (PB),
TDK HS − 120 (R／P)]

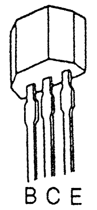
Signal	PB	R／P
Y-signal	More than 42dB	More than 42dB
Chrominance-Signal (AM)	More than 38dB	More than 38dB
Chrominance-Signal (PM)	More than 36dB	More than 35dB

Audio (SP mode) : More than 40dB
Audio Frequency Response : 200Hz∼6kHz (± 4dB)
(SP mode, Test tape A − BEX TPV − 160S)
Horizontal Resolution : More than 230 Lines
(PB, R／P)
(Test tape TTV − 06T)
Erase Ratio : More than 55dB
Bias Frequency : 70kHz ± 10 %
Tape speed : 23.39mm／sec ± 0.5 %
(SP mode)
Wow & Flutter : Less than 0.4 %
(Test tape TTV − P5, CCIR WTD)
F.F time : Less than 290sec (E-240)
REW time : Less than 290sec (E-240)
Back tension : 46.5 ± 12g-cm
Loading : Less than 3sec
Unloading : Less than 3.5sec

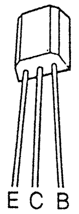
TRANSISTOR ILLUSTRATION



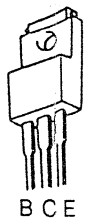
2SA993
2SC1740
2SC3940
2SD2274



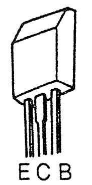
DTA144
DTC114
DTC144



2SA1048

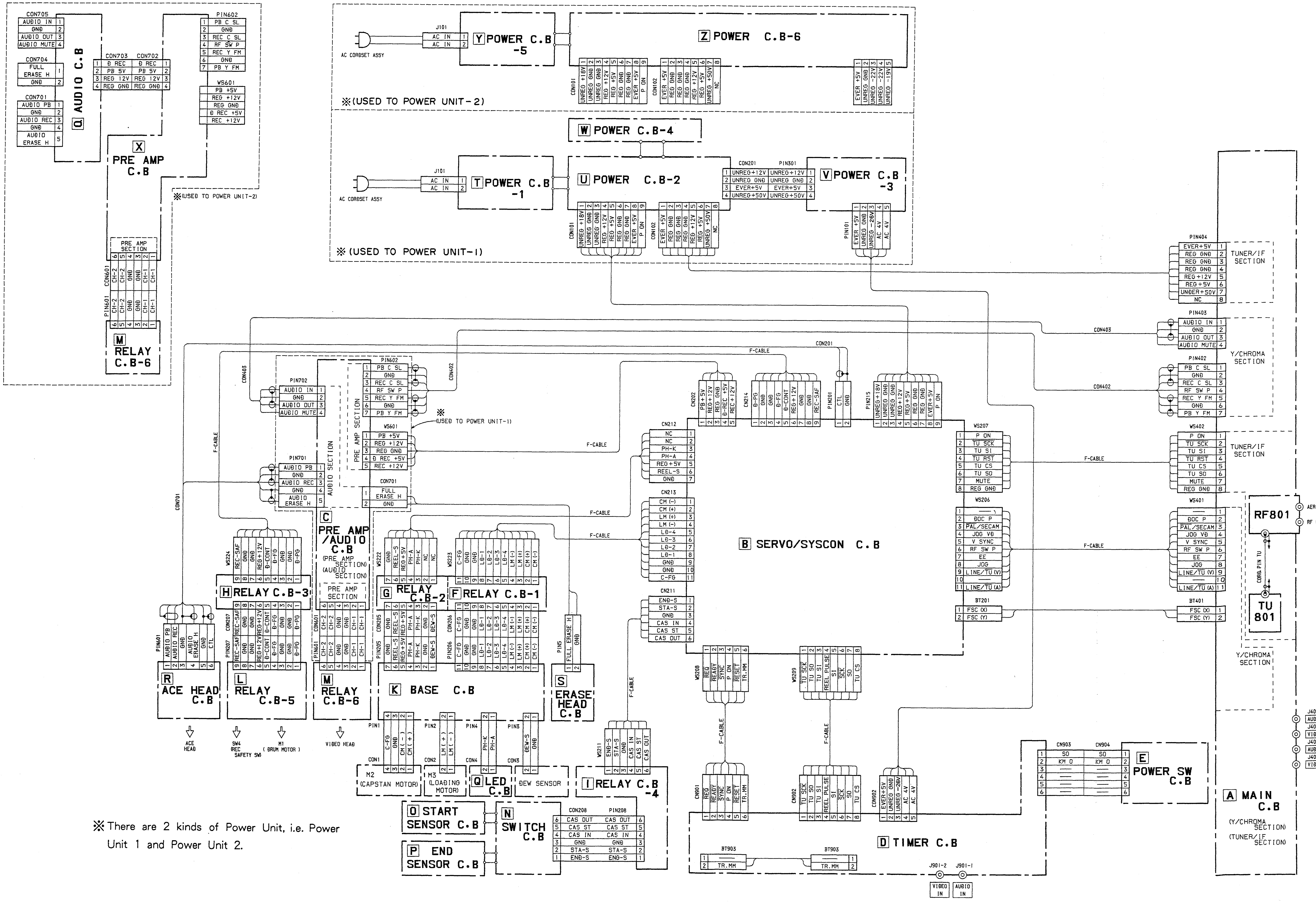


2SD2061



2SB733

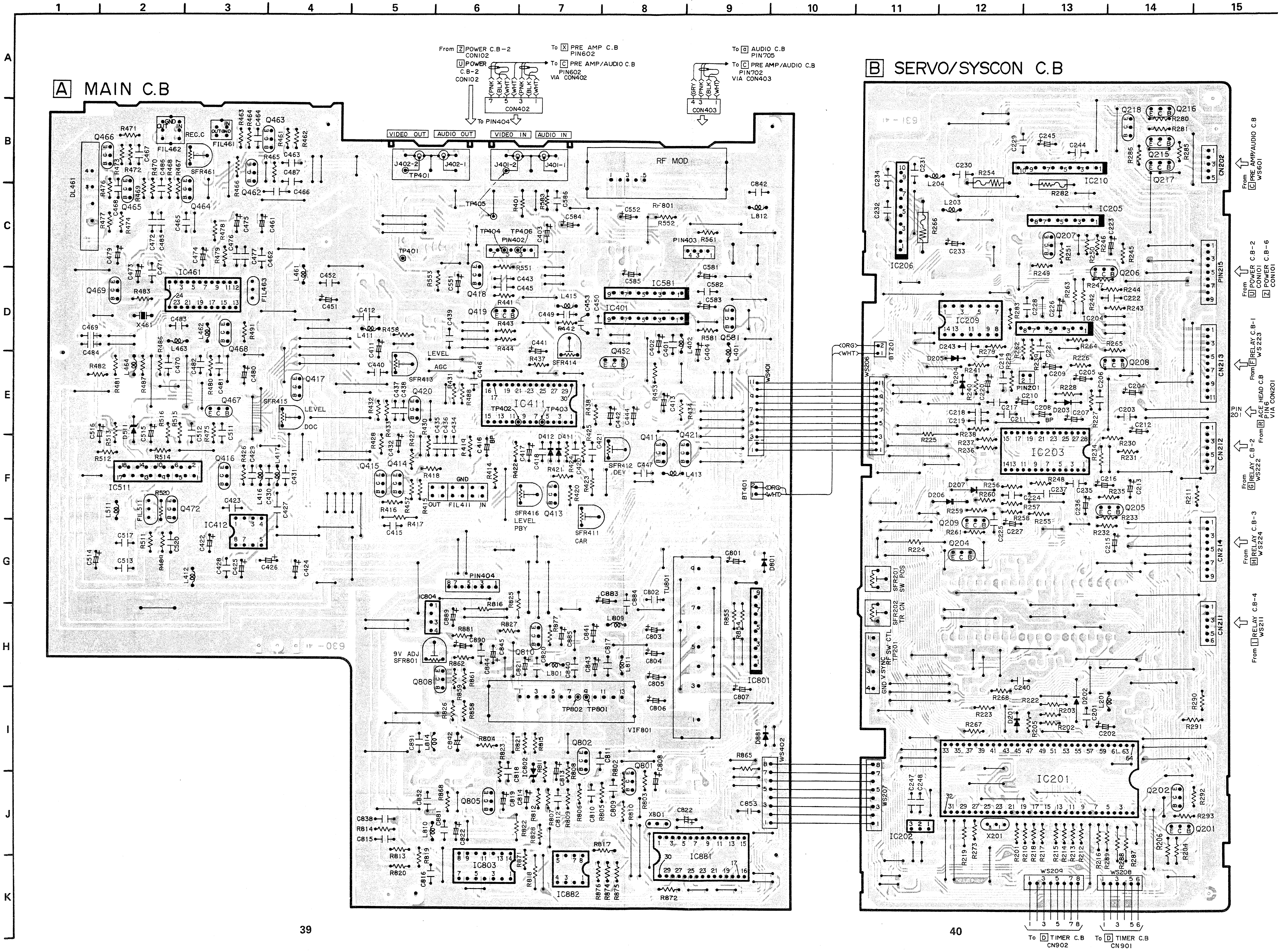
WIRE HARNESS DIAGRAM



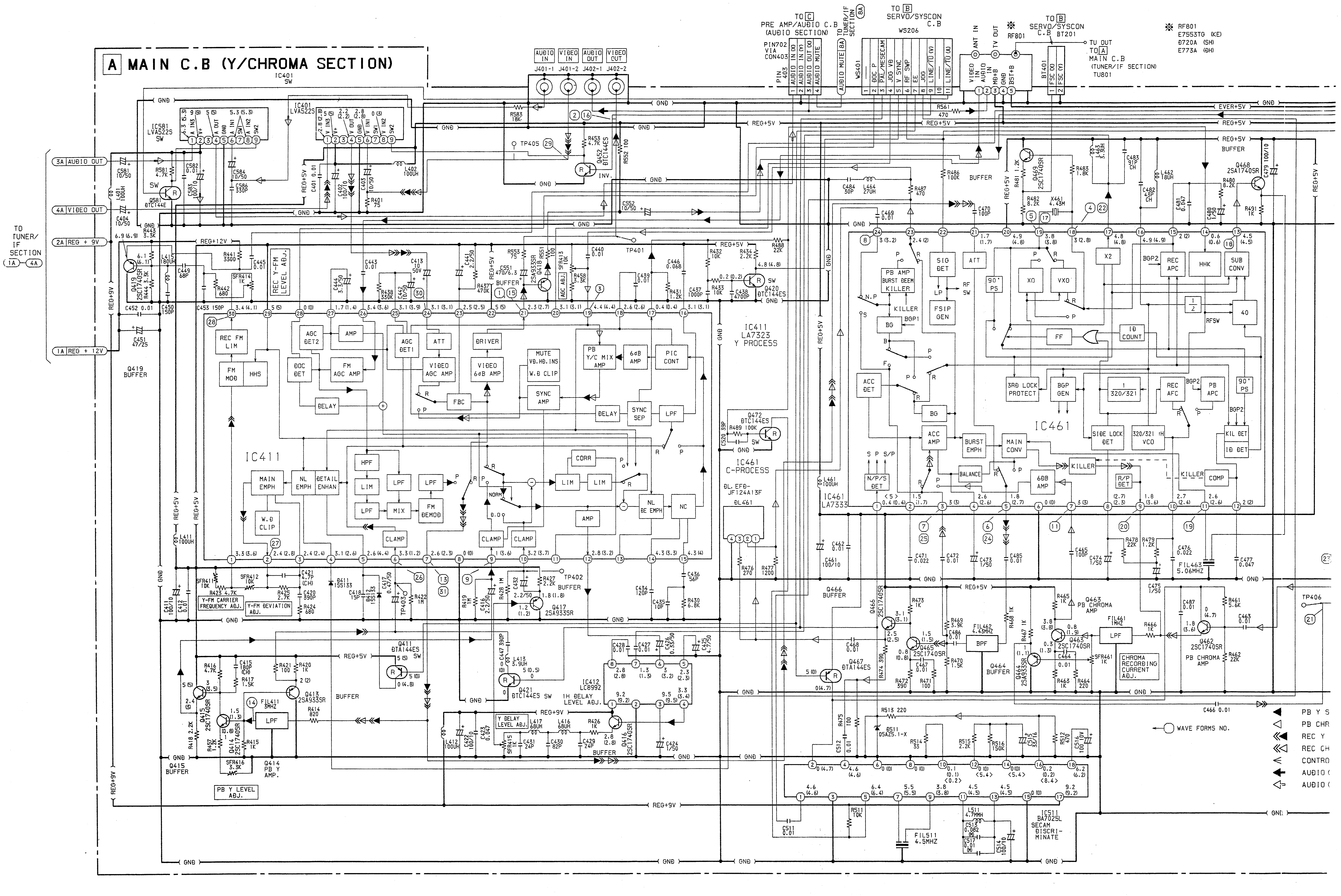
Q AUDIO C.B
CON705
AUDIO IN
GND
AUDIO OUT
AUDIO MUTE
CON704
FULL ERASE H
GND
CON701
AUDIO PB
GND
AUDIO REC
GND
AUDIO ERASE H
CON703
CON702
Φ REC
PB 5V
REG 12V
REG GND
PIN602
PB C SL
GND
REC C SL
RF SW P
REC Y FM
GND
PB Y FM
WS601
PB +5V
REG +12V
REG GND
Φ REC +5V
REC +12V
X PRE AMP C.B
※(USED TO POWER UNIT-2)
PRE AMP SECTION
CON601
PIN601
CH-2
GND
CH-1
M RELAY C.B-6
J101
AC IN
AC CORDSET ASSY
Y POWER C.B -5
Z POWER C.B-6
CON101
UNREG +18V
UNREG GND
REG +12V
REG +5V
REG GND
EVER +5V
P ON
CON102
EVER +5V
REG +5V
UNREG +50V
NC
UNREG -22V
UNREG -19V
※(USED TO POWER UNIT-2)
W POWER C.B-4
T POWER C.B -1
U POWER C.B-2
CON201
PIN301
UNREG+12V
UNREG GND
EVER+5V
UNREG+50V
V POWER C.B -3
PIN101
UNREG -26V
AC 4V
※(USED TO POWER UNIT-1)
PIN404
REG+12V
REG+5V
UNDER+50V
TUNER/IF SECTION
PIN403
CON403
PIN402
CON402
Y/CHROMA SECTION
CON201
F-CABLE
PIN702
PIN701
CON703
CON701
※(USED TO POWER UNIT-1)
PRE AMP SECTION
AUDIO SECTION
C PRE AMP /AUDIO C.B
(PRE AMP SECTION)
(AUDIO SECTION)
CN202
PB+5V
REG+12V
Φ-REC+5V
Φ-REC+12V
CN214
D-FG
D-CONT
REC-SAF
PIN201
CTL
PIN215
CN212
PH-K
PH-A
REEL-S
CN213
CM (-)
CM (+)
LM (+)
LM (-)
LD-1
LD-2
LD-3
LD-4
C-FG
CN211
END-S
STA-S
CAS IN
CAS ST
CAS OUT
B SERVO/SYSCON C.B
WS207
P ON
TU SCK
TU SI
TU RST
TU CS
TU SO
MUTE
WS206
DOC P
PAL/SECAM
JOG VD
V SYNC
RF SW P
EE
JOG
LINE/TU (V)
LINE/TU (A)
BT201
FSC (X)
FSC (Y)
WS402
WS401
BT401
RF801
AERIAL
RF OUT
CORD PIN TU
TU 801
Y/CHROMA SECTION
WS224
H RELAY C.B-3
WS222
G RELAY C.B-2
WS223
F RELAY C.B-1
PRE AMP SECTION
PIN601
R ACE HEAD C.B
CON207
PIN207
L RELAY C.B-5
CON601
M RELAY C.B-6
CON205
PIN205
CON206
PIN206
K BASE C.B
PIN5
S ERASE HEAD C.B
FULL ERASE H
ACE HEAD
SW4 (REC SAFETY SW)
M1 (DRUM MOTOR)
VIDEO HEAD
PIN1
PIN2
PIN4
PIN3
CON1
CON2
CON4
CON3
M2 (CAPSTAN MOTOR)
M3 (LOADING MOTOR)
Q LED C.B
DEW SENSOR
O START SENSOR C.B
P END SENSOR C.B
N SWITCH C.B
CON208
PIN208
WS211
I RELAY C.B -4
WS208
READY
SYNC
RESET
TR.MM
WS209
REEL PULSE
SCK
CN901
CN902
CN9002
D TIMER C.B
BT903
J901-2
J901-1
VIDEO IN
AUDIO IN
CN903
CN904
SO
KM O
E POWER SW C.B
A MAIN C.B
(Y/CHROMA SECTION)
(TUNER/IF SECTION)
J401-1
AUDIO IN
J401-2
VIDEO IN
J402-1
AUDIO OUT
J402-2
VIDEO OUT

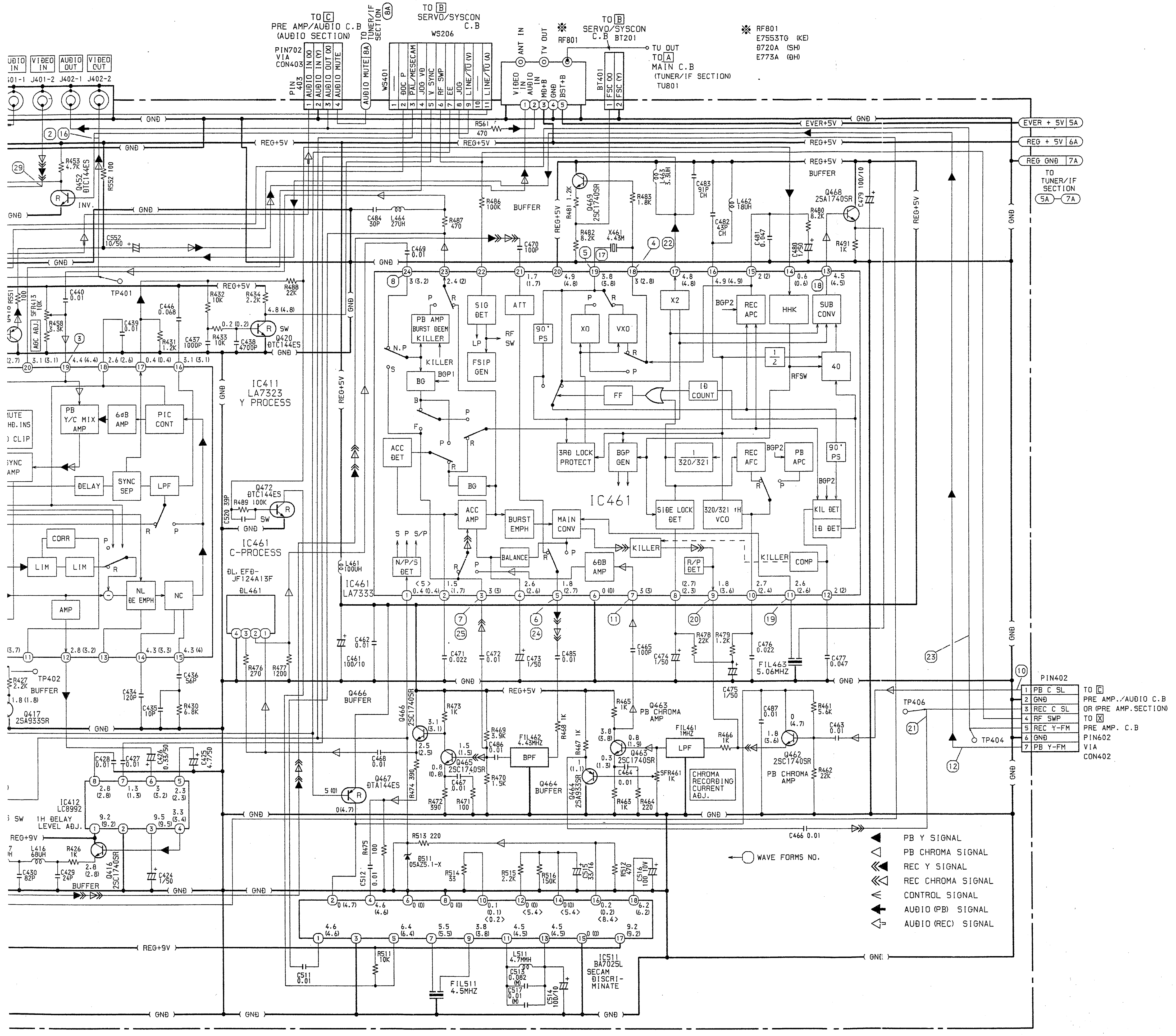
※There are 2 kinds of Power Unit, i.e. Power Unit 1 and Power Unit 2.

WIRING – 1 (VIDEO/TUNER/SERVO/SYSTEM CONTROL SECTION)

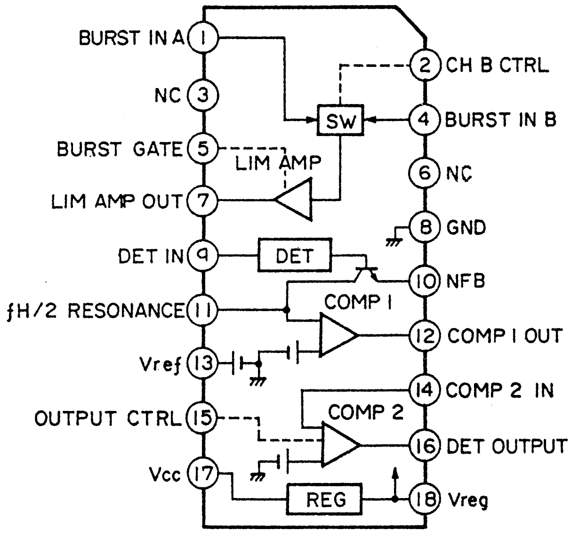

A MAIN C.B
B SERVO/SYSCON C.B
From Z POWER C.B-2 CON102
U POWER C.B-2 CON102
To PIN404
To X PRE AMP C.B PIN602
To C PRE AMP/AUDIO C.B PIN602 VIA CON402
CON402
To a AUDIO C.B PIN705
To C PRE AMP/AUDIO C.B PIN702 VIA CON403
CON403
VIDEO OUT
AUDIO OUT
VIDEO IN
AUDIO IN
RF MOD
DL461
IC461
IC511
IC412
IC411
IC401
IC581
IC801
IC803
IC804
IC881
IC882
VIF801
TU801
PIN404
FIL411
SFR413
SFR414
SFR415
SFR416 LEVEL PBY
SFR411 CAR
SFR412 DEV
SFR461
SFR801 9V ADJ
WS401
WS402
BT401
BT201
IC201
IC202
IC203
IC204
IC205
IC206
IC209
IC210
CN202
CN211
CN212
CN213
CN214
PIN215
WS206
WS207
WS208
WS209
SFR201 SW POS
SFR202 TR CN
RF SW CTL
V SYNC
TP201
GND
From C PRE AMP/AUDIO C.B WS601
From U POWER C.B-2 CON101
Z POWER C.B-6 CON101
From F RELAY C.B-1 WS223
From R ACE HEAD C.B PIN6 VIA CON201
PIN 201
From G RELAY C.B-2 WS222
From H RELAY C.B-3 WS224
From I RELAY C.B-4 WS211
To D TIMER C.B CN902
To D TIMER C.B CN901

SCHEMATIC DIAGRAM – 1 (VIDEO SECTION)

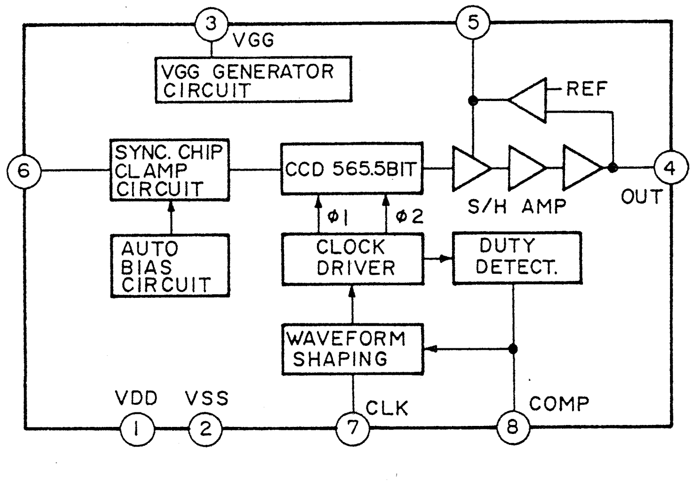

A MAIN C.B (Y/CHROMA SECTION)
TO C PRE AMP/AUDIO C.B (AUDIO SECTION)
PIN702 VIA CON403
TO TUNER/IF SECTION (8A)
TO B SERVO/SYSCON C.B
WS206
TO B SERVO/SYSCON C.B BT201
TU OUT
TO A MAIN C.B (TUNER/IF SECTION) TU801
※ RF801 E7553TG (KE) Ð720A (SH) E773A (ÐH)
AUDIO IN J401-1
VIDEO IN J401-2
AUDIO OUT J402-1
VIDEO OUT J402-2
TO TUNER/IF SECTION (1A)–(4A)
3A AUDIO OUT
4A VIDEO OUT
2A REG + 9V
1A REG + 12V
IC581 LVA522S SW
IC401 LVA522S SW
Q581 ÐTC144E SW
Q419 2SC1740SR BUFFER
Q452 ÐTC144ES INV.
Q418 2SA933SR BUFFER
Q420 ÐTC144ES SW
Q472 ÐTC144ES SW
IC411 LA7323 Y PROCESS
REC FM LIM
FM MOÐ
HHS
AGC ÐET2
AMP
ÐOC ÐET
FM AGC AMP
AGC ÐET1
ATT
VIDEO AGC AMP
ÐRIVER
VIDEO 6dB AMP
MUTE VÐ.HÐ.INS W.Ð CLIP
SYNC AMP
PB Y/C MIX AMP
6dB AMP
PIC CONT
ÐELAY
FBC
SYNC SEP
LPF
MAIN EMPH
NL EMPH
ÐETAIL ENHAN
W.Ð CLIP
HPF
LIM
MIX
FM ÐEMOÐ
CLAMP
CORR
NL BE EMPH
NC
NORM
REC Y-FM LEVEL ADJ.
Y-FM CARRIER FREQUENCY ADJ.
Y-FM DEVIATION ADJ.
Q417 2SA933SR BUFFER
Q411 ÐTA144ES SW
Q421 ÐTC144ES SW
IC412 LC8992 1H DELAY
Y DELAY LEVEL ADJ.
Q416 2SC1740SR BUFFER
Q415 2SC1740SR BUFFER
Q413 2SA933SR BUFFER
Q414 2SC1740SR PB Y AMP.
FIL411 3MHZ
PB Y LEVEL ADJ.
IC461 C-PROCESS
ÐL EFÐ-JF124A13F ÐL461
IC461 LA7333
PB AMP BURST ÐEEM KILLER
SIG ÐET
FSIP GEN
90° PS
XO
VXO
X2
BGP2
REC APC
HHK
SUB CONV
1/2
40
ID COUNT
FF
ACC ÐET
BG
3RÐ LOCK PROTECT
BGP GEN
1/320/321
REC AFC
PB APC
ACC AMP
BURST EMPH
MAIN CONV
SIÐE LOCK ÐET
320/321 1H VCO
KIL ÐET
IÐ ÐET
KILLER
BALANCE
6ÐB AMP
R/P ÐET
COMP
N/P/S ÐET
IC461
Q466 2SC1740SR BUFFER
Q467 ÐTA144ES
Q465 2SC1740SR
FIL462 4.43MHZ
BPF
Q464 2SA933SR BUFFER
Q463 2SC1740SR PB CHROMA AMP
FIL461 1MHZ
LPF
CHROMA RECORDING CURRENT ADJ.
Q462 2SC1740SR PB CHROMA AMP
Q469 2SC1740SR BUFFER
X461 4.43M
Q468 2SA1740SR BUFFER
FIL463 5.06MHZ
TP401
TP402
TP403
TP405
TP406
Ð511 05AZ5.1-X
IC511 BA7025L SECAM ÐISCRI-MINATE
FIL511 4.5MHZ
L511 4.7MMH
REG+5V
REG+9V
REG+12V
EVER+5V
GNÐ
WAVE FORMS NO.
PB Y S
PB CHR
REC Y
REC CH
CONTRO
AUDIO (
AUDIO (


TO C
PRE AMP/AUDIO C.B
(AUDIO SECTION)
TO TUNER/IF SECTION (8A)
TO B
SERVO/SYSCON C.B
WS206
TO B
SERVO/SYSCON C.B BT201
RF801
TU OUT
TO A
MAIN C.B
(TUNER/IF SECTION)
TU801
※ RF801
E7553TG (KE)
B720A (SH)
E773A (BH)
VIDEO IN
VIDEO OUT
AUDIO OUT
J401-2 J402-1 J402-2
PIN702 VIA CON403
PIN 403
AUDIO IN (X)
AUDIO IN (Y)
AUDIO OUT (X)
AUDIO MUTE
AUDIO MUTE (8A)
WS401
DOC P
PAL/MESECAM
JOG VD
V SYNC
RF SWP
EE
JOG
LINE/TU (V)
LINE/TU (A)
ANT IN
TV OUT
VIDEO IN
AUDIO IN
MD+B
GND
BST+B
BT401
FSC (X)
FSC (Y)
EVER+5V
REG+5V
GND
EVER + 5V 5A
REG + 5V 6A
REG GND 7A
TO TUNER/IF SECTION 5A - 7A
Q452 DTC144ES INV.
R453 4.7K
R552 100
C552 10/50
TP401
C440 0.01
SFR413 10K AGC ADJ.
R458 3.3K
C446 0.068
C439 0.01
R432 10K
R434 2.2K
R488 22K
R431 1.2K
C437 1000P
R433 10K
C438 4700P
Q420 DTC144ES SW
IC411 LA7323 Y PROCESS
PB Y/C MIX AMP
6dB AMP
PIC CONT
DELAY
SYNC SEP
LPF
CORR
LIM
NL DE EMPH
NC
AMP
TP402
R427 2.2K
BUFFER
Q417 2SA933SR
C436 56P
C434 120P
C435 10P
R430 6.8K
IC412 LC8992
1H DELAY LEVEL ADJ.
L416 68UH
R426 1K
Q416 2SC1740SR BUFFER
C430 82P
C429 24P
C424 1/50
C428 0.01
C427 0.01
C426 0.33/50
C425 4.7/50
C520 39P
R489 100K
Q472 DTC144ES SW
IC461 C-PROCESS
DL EFD-JF124A13F
DL461
L461 100UH
IC461 LA7333
R476 270
R477 1200
C462 0.01
C461 100/10
C484 50P
L464 27UH
R486 100K
R487 470
BUFFER
C469 0.01
C470 100P
R481 1.2K
Q469 2SC1740SR
R483 1.8K
L463 3.3UH
C483 91P CH
L462 18UH
C482 43P CH
C481 0.047
R482 8.2K
X461 4.43M
Q468 2SA1740SR
C479 100/10
R480 8.2K
C480 1/50
R491 1K
BUFFER
PB AMP BURST DEEM KILLER
SIG DET
ATT
90° PS
XO
VXO
X2
BGP2
REC APC
HHK
SUB CONV
KILLER
BGP1
FSIP GEN
RF SW
LP
BG
FF
1/2
40
RFSW
1D COUNT
ACC DET
3RD LOCK PROTECT
BGP GEN
1 320/321
REC AFC
PB APC
90° PS
BGP2
IC461
SIDE LOCK DET
320/321 fH VCO
KIL DET
ID DET
ACC AMP
BURST EMPH
MAIN CONV
BALANCE
6DB AMP
KILLER
R/P DET
KILLER
COMP
N/P/S DET
S P S/P
C471 0.022
C472 0.01
C473 1/50
C485 0.01
C465 100P
C474 1/50
R478 22K
R479 1.2K
C476 0.022
FIL463 5.06MHZ
C477 0.047
C475 1/50
Q466 BUFFER
Q466 2SC1740SR
R473 1K
R469 3.9K
C486 0.01
FIL462 4.43MHZ
BPF
R468 1K
R465 1K
Q463 PB CHROMA AMP
FIL461 1MHZ
LPF
R466 1K
C487 0.01
Q462 2SC1740SR PB CHROMA AMP
R461 5.6K
C463 0.01
R462 22K
C468 0.01
Q465 2SC1740SR
C467 0.01
R470 1.5K
Q467 DTA144ES
R474 390
R472 390
R471 100
Q464 BUFFER
R467 1K
Q464 2SA933SR
C464 0.01
SFR461 1K
CHROMA RECORDING CURRENT ADJ.
R463 1K
R464 220
C466 0.01
TP406
TP404
PIN402
1 PB C SL
2 GND
3 REC C SL
4 RF SWP
5 REC Y-FM
6 GND
7 PB Y-FM
TO C
PRE AMP./AUDIO C.B
OR (PRE AMP. SECTION)
TO X
PRE AMP. C.B
PIN602 VIA CON402
R475 100
C512 0.01
R513 220
D511 05AZ5.1-X
R514 33
R515 2.2K
R516 150K
C515 33/16
R512 470
C516 100/10V
R511 10K
C511 0.01
FIL511 4.5MHZ
L511 4.7MMH
C513 0.082
C517 0.01
C514 100/10
IC511 BA7025L SECAM DISCRIMINATE
REG+9V
WAVE FORMS NO.
PB Y SIGNAL
PB CHROMA SIGNAL
REC Y SIGNAL
REC CHROMA SIGNAL
CONTROL SIGNAL
AUDIO (PB) SIGNAL
AUDIO (REC) SIGNAL

IC,BA7025L


BURST IN A 1
NC 3
BURST GATE 5
LIM AMP OUT 7
DET IN 9
fH/2 RESONANCE 11
Vref 13
OUTPUT CTRL 15
Vcc 17
2 CH B CTRL
4 BURST IN B
6 NC
8 GND
10 NFB
12 COMP I OUT
14 COMP 2 IN
16 DET OUTPUT
18 Vreg
SW
LIM AMP
DET
COMP I
COMP 2
REG

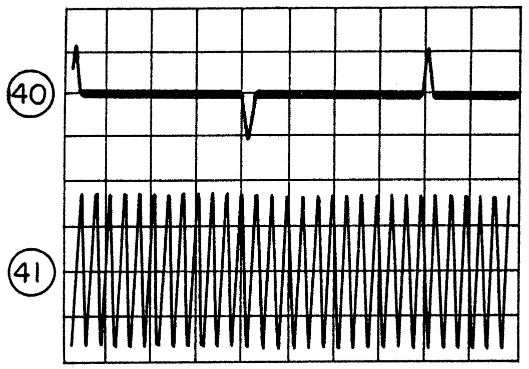
IC,LC8992


3 VGG
5
VGG GENERATOR CIRCUIT
REF
6
SYNC. CHIP CLAMP CIRCUIT
CCD 565.5BIT
φ1 φ2
S/H AMP
4 OUT
AUTO BIAS CIRCUIT
CLOCK DRIVER
DUTY DETECT.
WAVEFORM SHAPING
VDD 1
VSS 2
CLK 7
COMP 8

WAVE FORM－1 (SERVO WAVE FORM)

1. DRUM PG AND FG

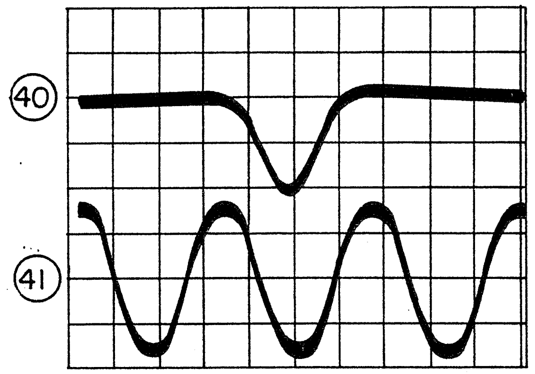
Lower : DRUM PG AC 0.1V/div.
(IC203 pin ⑯)
Lower : DRUM FG AC 50mV/div.
(IC203 pin ⑰)
Time 5ms/div.



2. DRUM PG AND FG

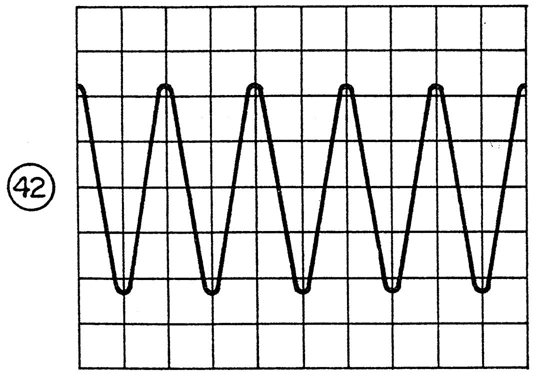
Enlargement of 1

The PG pulse (upper) is generated (either positive or negative) when the FG pulse (lower) is a negative half wave.



3. CAPSTAN FG (IC203 pin ⑱)

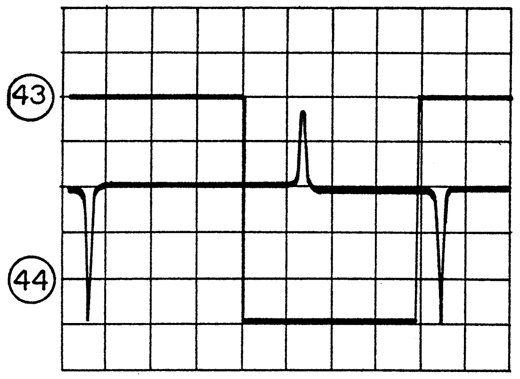
AC 0.1V/div.
Time 1ms/div/



4. RF SW PULSE AND CTL (PB MODE)

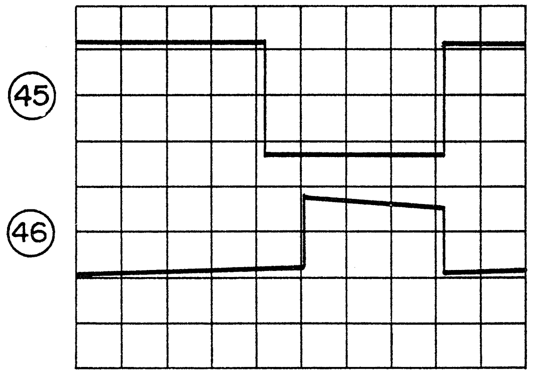
RF SW PULSE DC 1V/div. (IC203 pin ⑩)
CTL AC 0.5V/div. (IC203 pin ㉒)
Time 5ms/div.

The CTL pulse (negative) is 2.3±0.3ms from the leading edge of the RF SW pulse.



5. RF SW PULSE AND CTL (REC MODE)

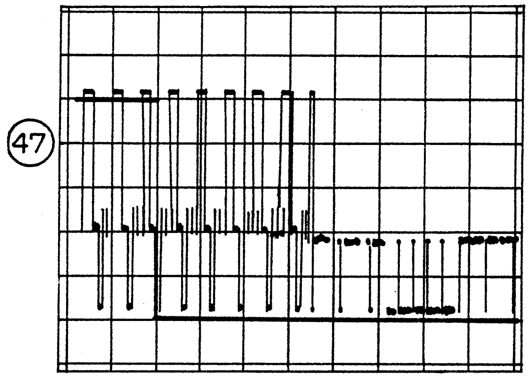
Upper : RF SW PULSE DC 2V/div.
(IC203 pin ⑩)
Lower : CTL AC 2V/div.
(IC203 pin ㉒)
Time 5ms/div.

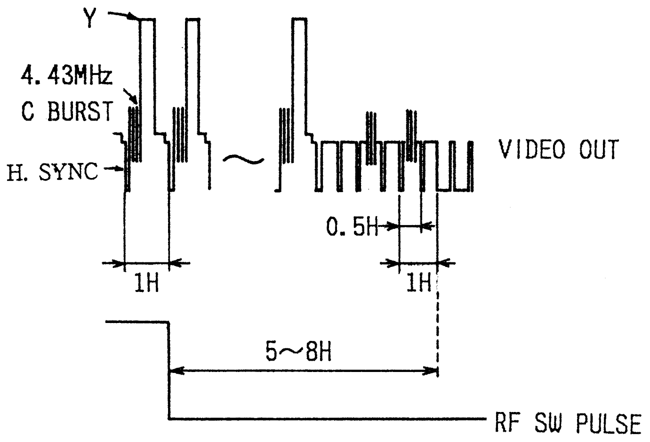


6. RF SW PULSE AND VIDEO OUT

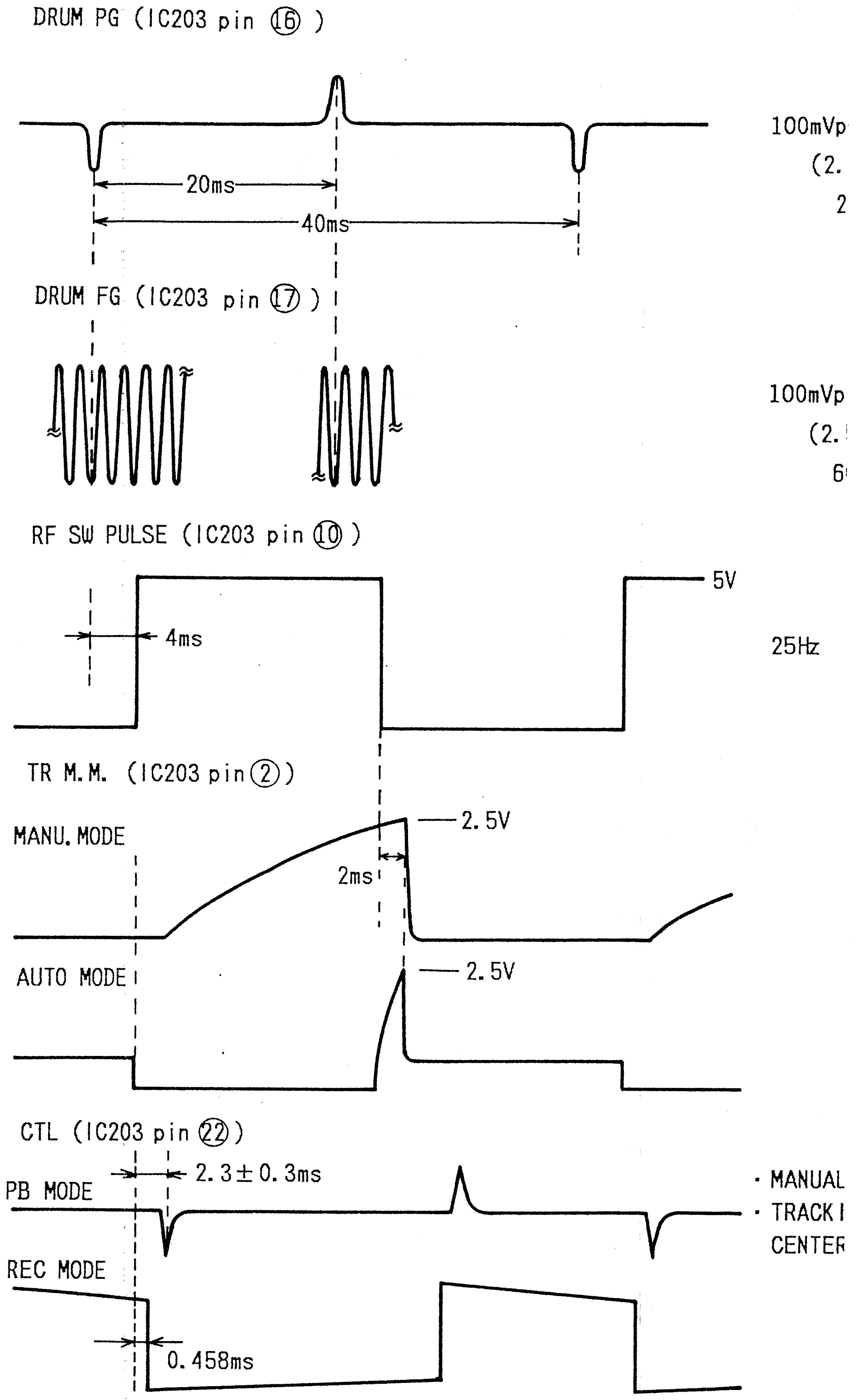
RF SW PULSE DC 1V/div. (IC203 pin ⑩)
Video out (OPEN) AC 0.5V/div.
Time 0.1ms/div.

The RF SW pulse rises of falls 5~8H (320~512 μ s) before the VD (vertical sync) signal in the video signal.




Y
4.43MHz
C BURST
H. SYNC
VIDEO OUT
0.5H
1H
1H
5~8H
RF SW PULSE

DRUM SERVO SYSTEM TIMING CHART


DRUM PG (IC203 pin ⑯)
20ms
40ms
100mVp
(2.
2
DRUM FG (IC203 pin ⑰)
100mVp
(2.
6
RF SW PULSE (IC203 pin ⑩)
5V
4ms
25Hz
TR M.M. (IC203 pin②)
MANU. MODE
2.5V
2ms
AUTO MODE
2.5V
CTL (IC203 pin ㉒)
PB MODE
2.3±0.3ms
· MANUAL
· TRACK I
CENTER
REC MODE
0.458ms

6. RF SW PULSE AND VIDEO OUT

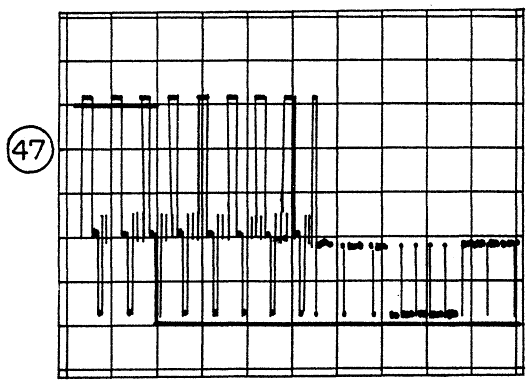
RF SW PULSE DC 1V/div. (IC203 pin ⑩)

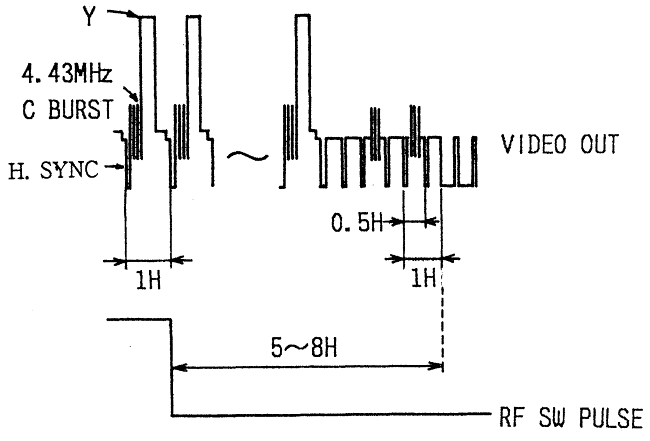
Video out (OPEN) AC 0.5V/div.

Time 0.1ms/div.

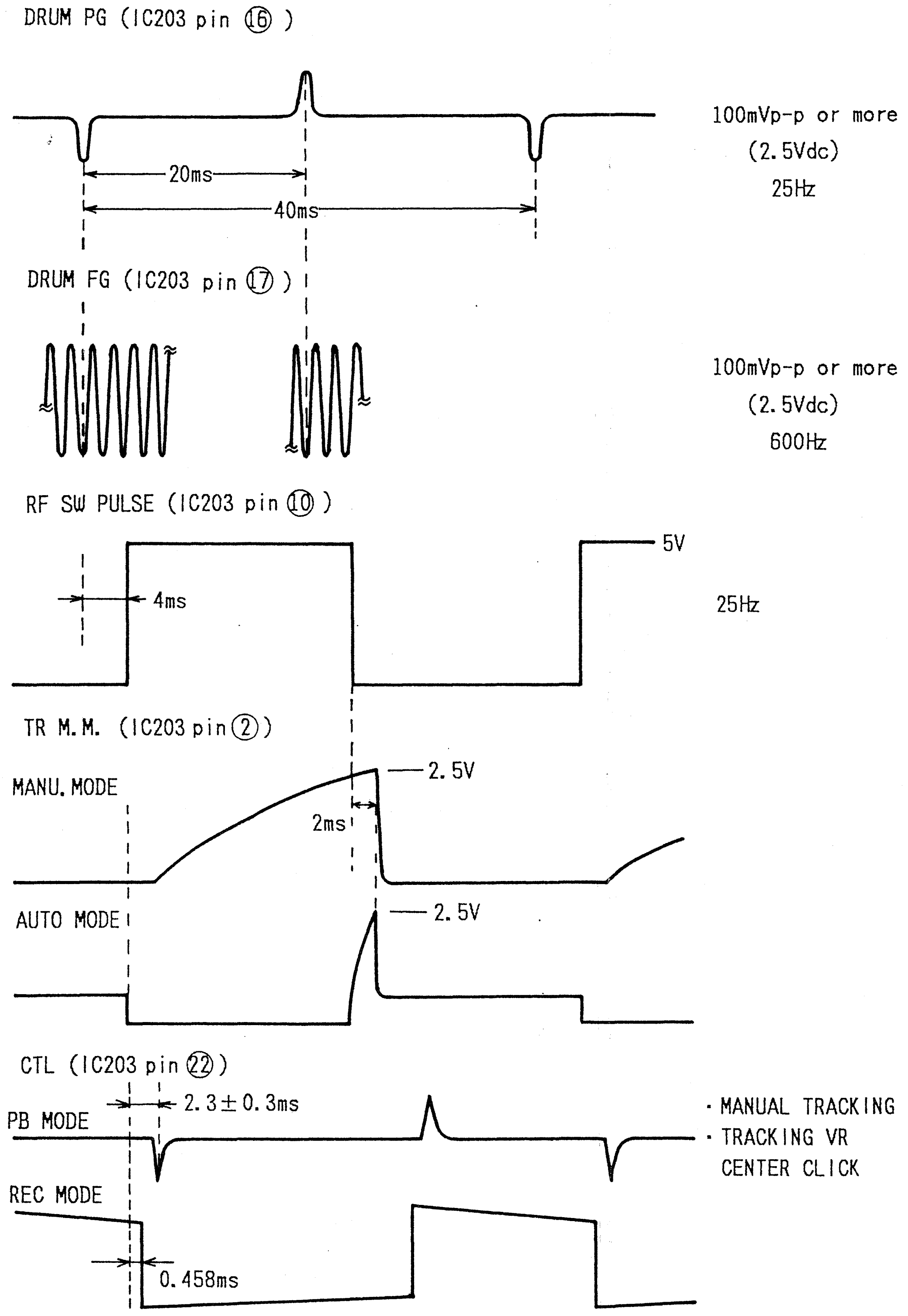
The RF SW pulse rises of falls 5~8H (320~512 μs) before the VD (vartical sync) signal in the video signal.

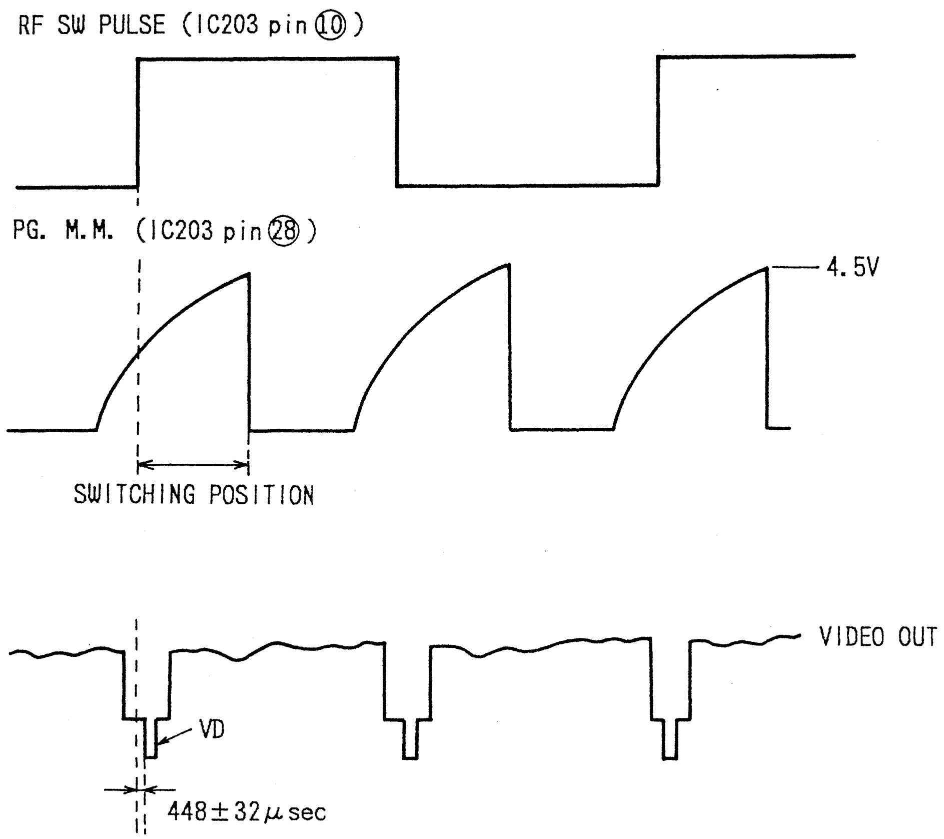
(47)



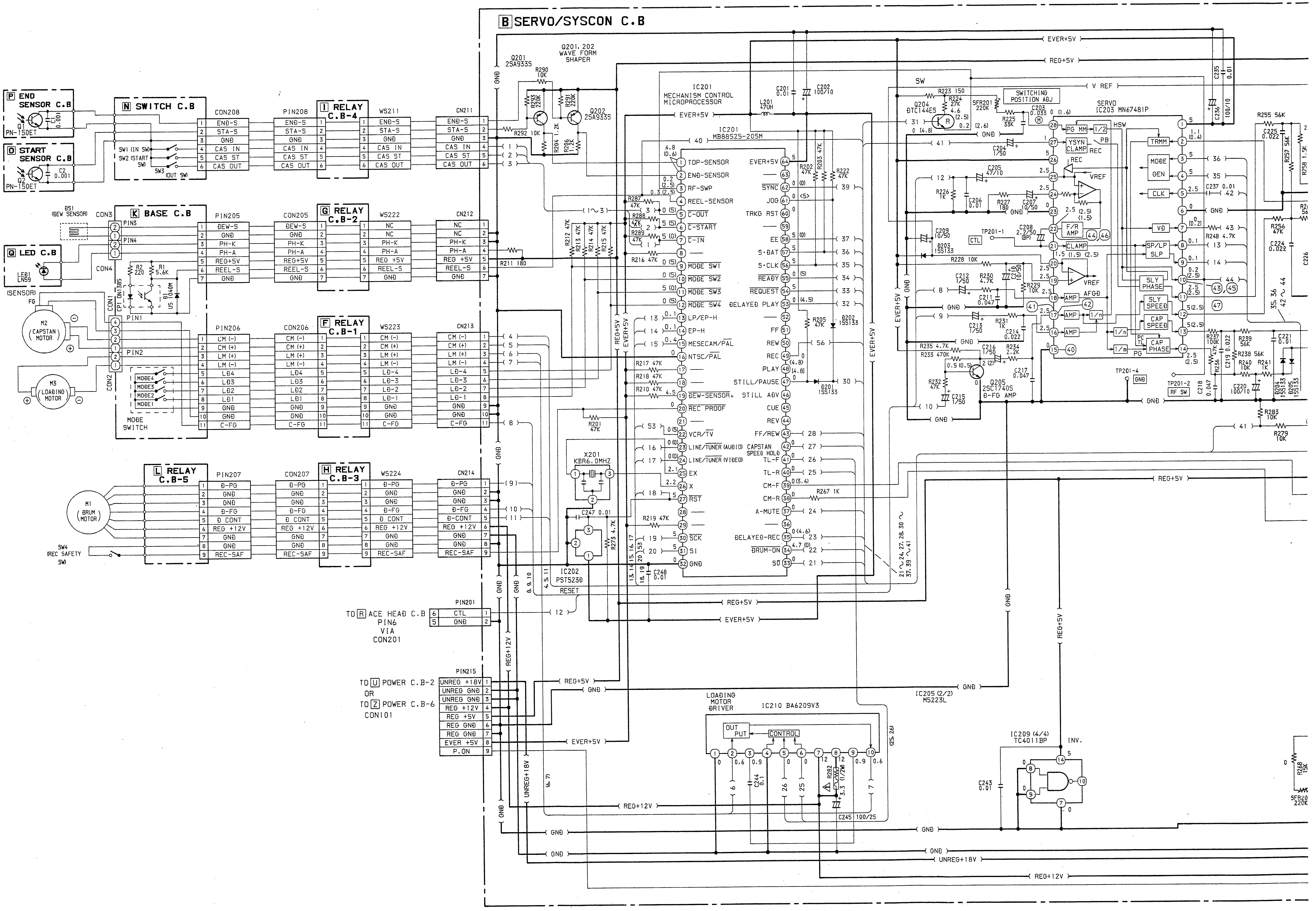


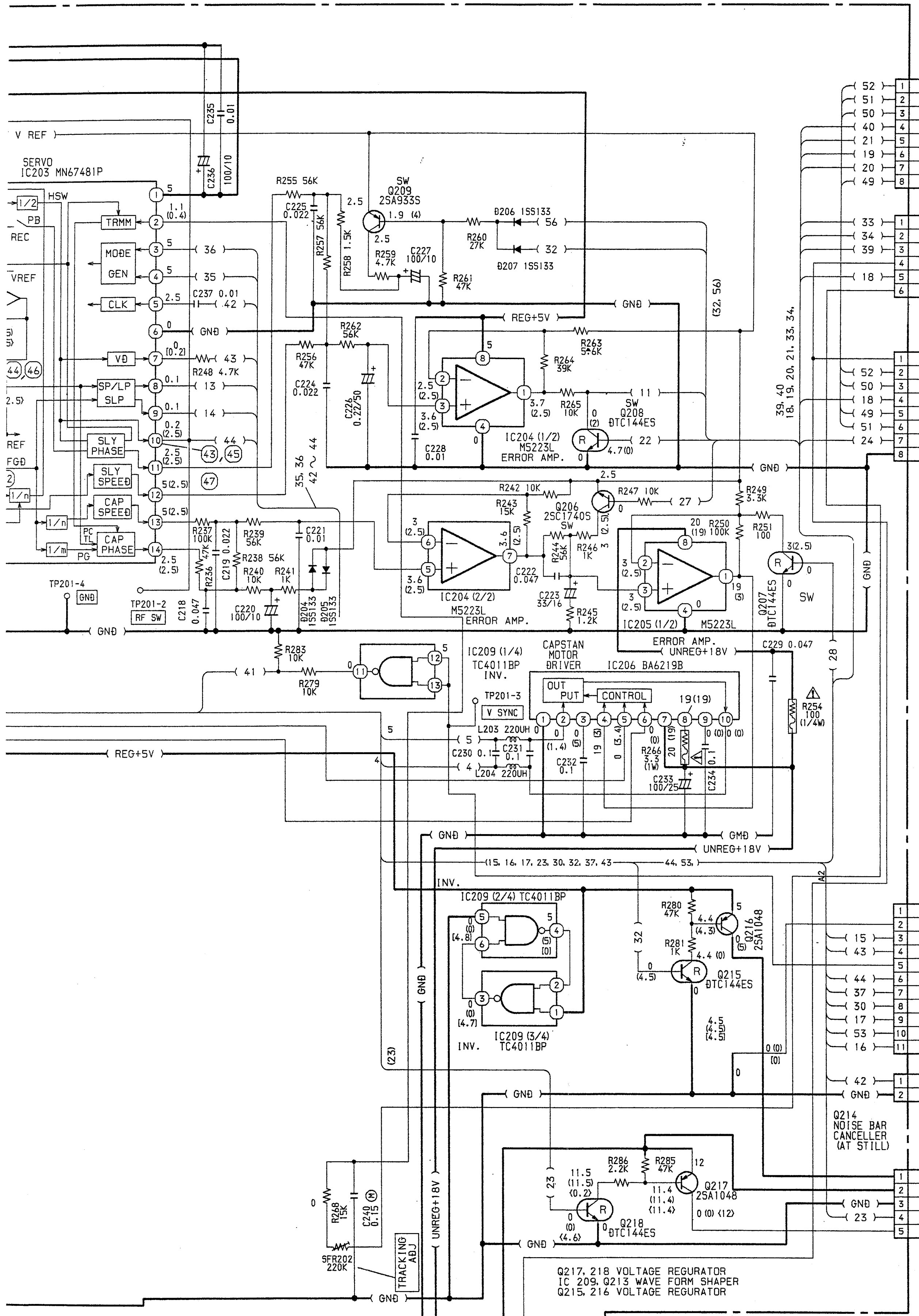
DRUM SERVO SYSTEM TIMING CHART


DRUM PG (IC203 pin ⑯)
20ms
40ms
100mVp-p or more
(2.5Vdc)
25Hz
DRUM FG (IC203 pin ⑰)
100mVp-p or more
(2.5Vdc)
600Hz
RF SW PULSE (IC203 pin ⑩)
4ms
5V
25Hz
TR M.M. (IC203 pin ②)
MANU. MODE
2.5V
2ms
AUTO MODE
2.5V
CTL (IC203 pin ㉒)
2.3±0.3ms
PB MODE
· MANUAL TRACKING
· TRACKING VR
CENTER CLICK
REC MODE
0.458ms


RF SW PULSE (IC203 pin ⑩)
PG. M.M. (IC203 pin ㉘)
4.5V
SWITCHING POSITION
VIDEO OUT
VD
448±32μsec

SCHEMATIC DIAGRAM – 2 (SERVO/SYSTEM CONTROL SECTION)


B SERVO/SYSCON C.B
P END SENSOR C.B
O START SENSOR C.B
N SWITCH C.B
I RELAY C.B-4
K BASE C.B
G RELAY C.B-2
Q LED C.B
F RELAY C.B-1
L RELAY C.B-5
H RELAY C.B-3
M2 CAPSTAN MOTOR
M3 LOADING MOTOR
M1 DRUM MOTOR
MODE SWITCH
SW4 (REC SAFETY SW)
IC201 MECHANISM CONTROL MICROPROCESSOR
IC201 MB88525-205M
Q201, 202 WAVE FORM SHAPER
Q201 2SA933S
Q202 2SA933S
SERVO IC203 MN67481P
SWITCHING POSITION ADJ
Q205 2SC1740S Ð-FG AMP
X201 KBR6.0MHZ
IC202 PST523D RESET
LOADING MOTOR DRIVER IC210 BA6209V3
IC205 (2/2) M5223L
IC209 (4/4) TC4011BP INV.
TO R ACE HEAD C.B PIN6 VIA CON201
TO U POWER C.B-2 OR TO Z POWER C.B-6 CON101
EVER+5V
REG+5V
REG+12V
UNREG+18V
GND
V REF

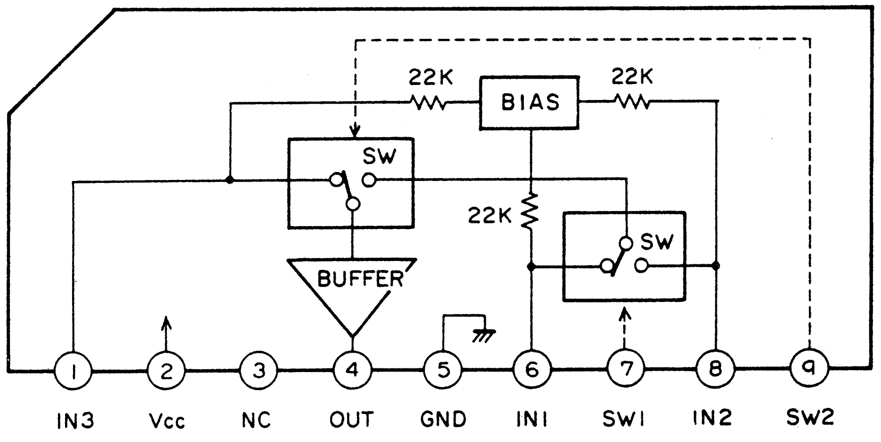

V REF
SERVO
IC203 MN67481P
HSW
TRMM
MODE
GEN
CLK
VD
SP/LP
SLP
SLY PHASE
SLY SPEED
CAP SPEED
CAP PHASE
PG
TP201-4
GND
TP201-2
RF SW
R255 56K
C225 0.022
SW
Q209
2SA933S
R257 56K
R258 1.5K
R259 4.7K
C227 100/10
R260 27K
R261 47K
D206 1SS133
D207 1SS133
REG+5V
GND
R262 56K
R256 47K
C224 0.022
C226 0.22/50
R263 5.6K
R264 39K
R265 10K
Q208
DTC144ES
IC204 (1/2)
M5223L
ERROR AMP.
C228 0.01
R242 10K
R243 15K
Q206
2SC1740S
R247 10K
R249 3.3K
R250 100K
R251 100
R246 1K
C222 0.047
C223 33/16
R245 1.2K
IC204 (2/2)
M5223L
ERROR AMP.
IC205 (1/2) M5223L
ERROR AMP.
Q207
DTC144ES
R237 100K
R239 56K
C221 0.01
R238 56K
R240 10K
R241 1K
C219 0.022
R236 47K
C220 100/10
D204 1SS133
D205 1SS133
C218 0.047
R283 10K
R279 10K
IC209 (1/4)
TC4011BP
INV.
CAPSTAN MOTOR DRIVER
IC206 BA6219B
UNREG+18V
C229 0.047
R254 100 (1/4W)
TP201-3
V SYNC
OUT PUT
CONTROL
L203 220UH
C230 0.1
C231 0.1
L204 220UH
C232 0.1
R266 3.3 (1W)
C233 100/25
C234 0.1
IC209 (2/4) TC4011BP
IC209 (3/4) TC4011BP
INV.
R280 47K
R281 1K
Q216
2SA1048
Q215
DTC144ES
R286 2.2K
R285 47K
Q217
2SA1048
Q218
DTC144ES
R268 15K
C240 0.15 (M)
SFR202 220K
TRACKING ADJ
UNREG+18V
WS209
TU SCK
TU SO
TU SI
REEL PULSE
SI
SCK
SO
TU CS
TO
D TIMER C.B
CN902
WS208
REQ
READY
SYNC
P.ON
RESET
TR.MM
TO
D TIMER C.B
CN901
WS207
P.ON
TU SCK
TU SI
TURST
TU CS
TU SO
MUTE
REG GND
TO
A MAIN C.B
(TUNER/IF SECTION)
WS402
WS206
DOC P
PAL/SECAM
JOG VD
V SYNC
RF SW P
EE
JOG
LINE/TU (V)
LINE/TU (A)
TO
A MAIN C.B
(Y/CHROMA SECTION)
WS401
BT201
FSC (X)
FSC (Y)
TO A MAIN C.B
(Y/CHROMA SECTION)
BT401
Q214
NOISE BAR CANCELLER
(AT STILL)
CN202
PB +5V
REG+12V
REG GND
D-REC +5V
REC+12V
TO C
PREAMP/AUDIO C.B
(PRE AMP SECTION)
OR
TO X
PRE AMP C.B
WS601
Q217, 218 VOLTAGE REGURATOR
IC 209, Q213 WAVE FORM SHAPER
Q215, 216 VOLTAGE REGURATOR

VOLTAGE VALUE
NO MARK : EE
( ) : PB
〈 〉 : REC
[ ] : STILL
< > : CUE, REV

◯ WAVE FORMS NO.

IC BLOCK DIAGRAM – 1

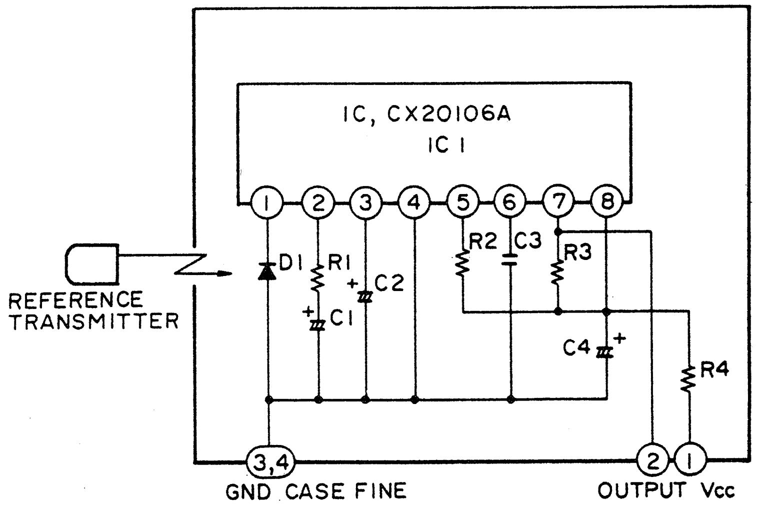
IC,LVA522S


22K
BIAS
22K
SW
22K
SW
BUFFER
1
2
3
4
5
6
7
8
9
IN3
Vcc
NC
OUT
GND
IN1
SW1
IN2
SW2

CONTROL INPUT
TRUTH TABLE

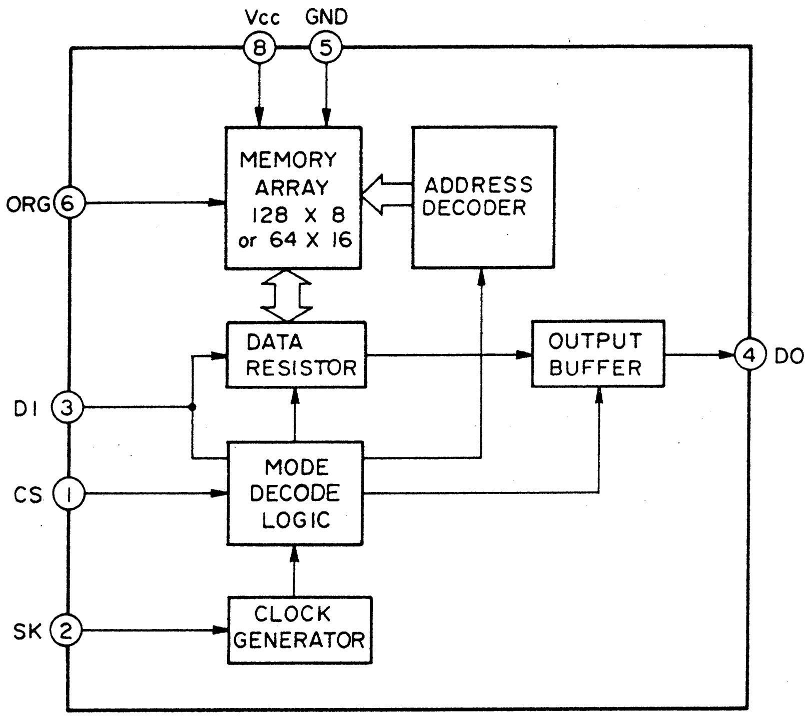
SW1	SW2	OUT
L	L	IN1
H	L	IN2
H	H	IN3

IC,SBX1610

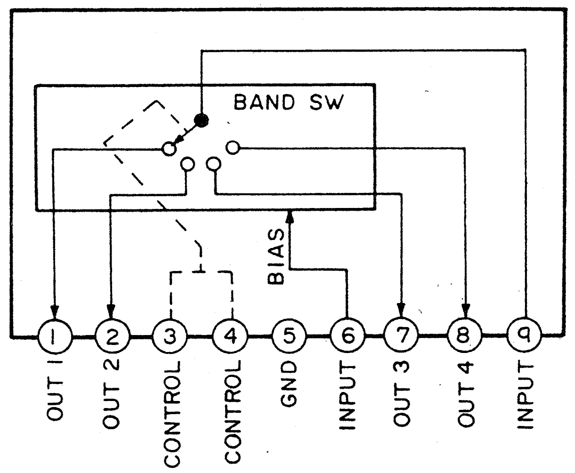

IC, CX20106A
IC 1
1
2
3
4
5
6
7
8
D1
R1
C1
C2
R2
C3
R3
C4
R4
REFERENCE
TRANSMITTER
3,4
2
1
GND CASE FINE
OUTPUT Vcc

IC BLOCK DIAGRAM — 2

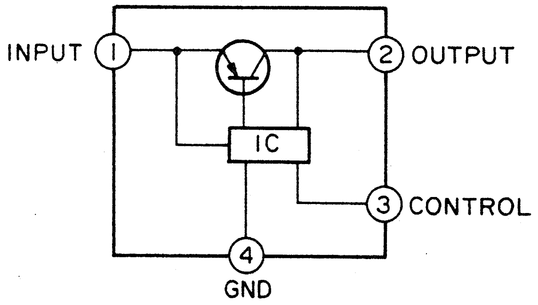
IC,MSM16811


Vcc
GND
8
5
ORG 6
MEMORY ARRAY 128 X 8 or 64 X 16
ADDRESS DECODER
DATA RESISTOR
OUTPUT BUFFER
4 DO
DI 3
CS 1
MODE DECODE LOGIC
SK 2
CLOCK GENERATOR

IC,LA7910


BAND SW
BIAS
1
2
3
4
5
6
7
8
9
OUT 1
OUT 2
CONTROL
CONTROL
GND
INPUT
OUT 3
OUT 4
INPUT

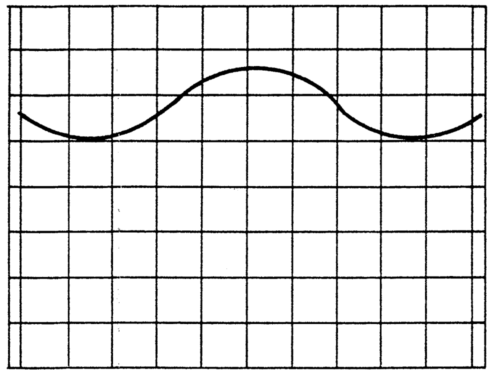
IC,PQ09R05


INPUT 1
2 OUTPUT
IC
3 CONTROL
4 GND

WAVE FORM — 2 (AUDIO WAVE FORM)

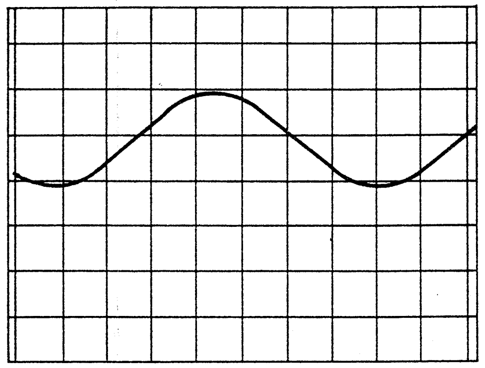
T701 pin①
5V/div.
2 μs/div.

(70)



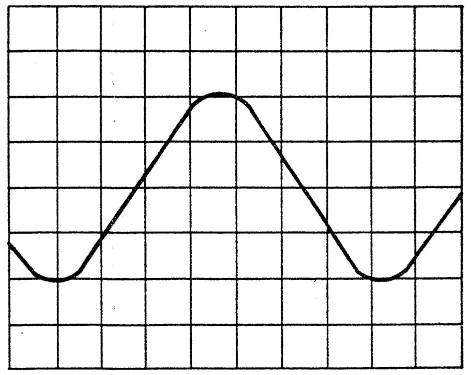
T701 pin③
10V/div.
2 μs/div.

(71)



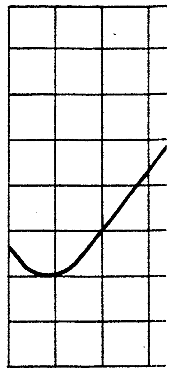
T701 pin⑤
10V/div.
2 μs/div.

(72)



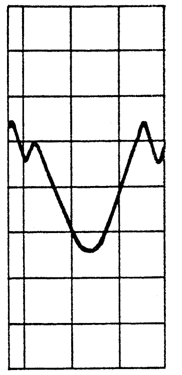
T701 pin⑥
20V/div.
2 μs/div.

(73)



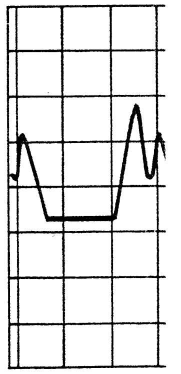
Q701 BASE
1V/div.
5 μs/div.

(74)



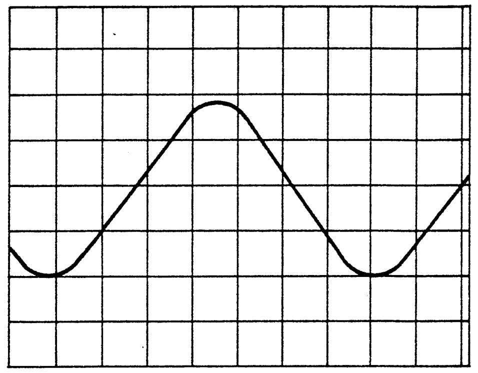
Q701 emitter
500mV/div.
5 μs/div.

(75)



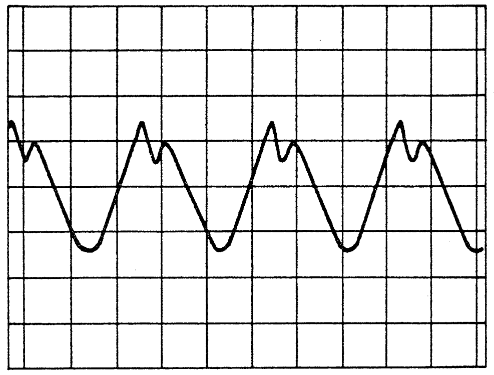
T701 pin⑥
20V/div.
2 µs/div.

(73)



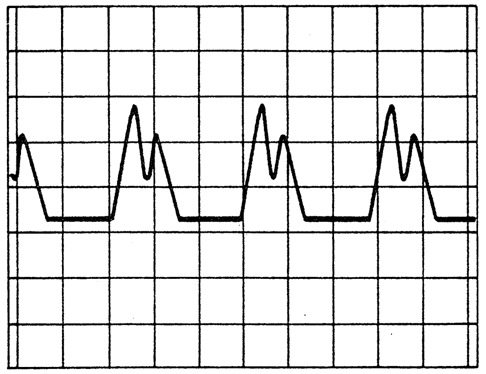
Q701 BASE
1V/div.
5 µs/div.

(74)



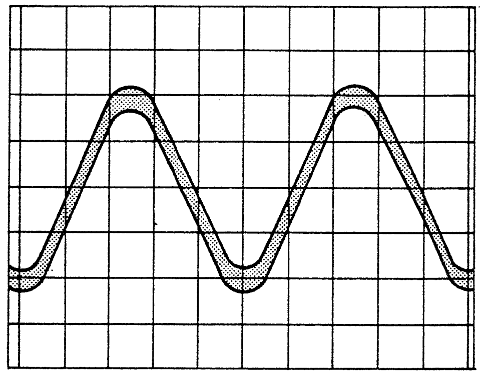
Q701 emitter
500mV/div.
5 µs/div.

(75)



IC701 pins⑦and⑧
20mV/div.
200 µs/div.

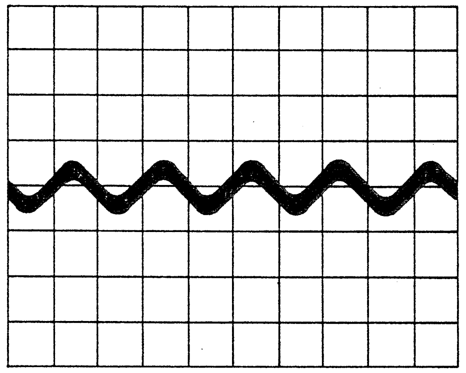
(76)



- The wave form shown in the illustration on the below is at pin ⑪ of IC701.
- IC701 pins ⑭ to ⑰ are 900mVp – p.
- The specification of the EE level is – 8.5 ± 1dBs when a 1kHz – 10dBs signal is input.

20mV/div.
500 µs/div.

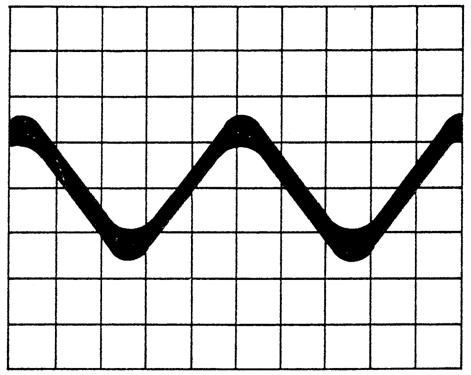
(77)



- The wave form shown in the illustration on the below is at pins ⑳ and ㉓ of IC701.
- IC701 pin ㉕ is 1.53Vp – p.

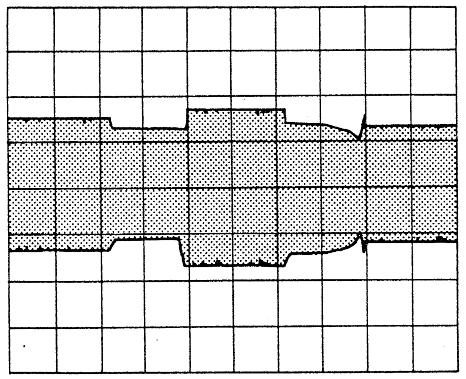
50mV/div.
200 µs/div.

(78)



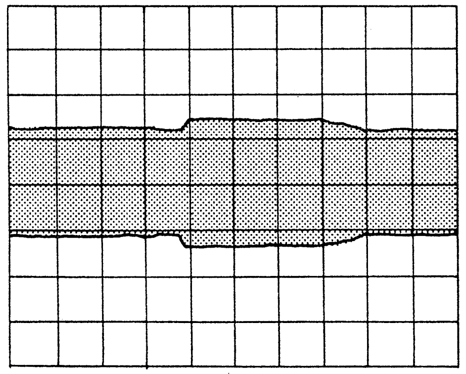
PIN602 pin① (PB)
5ms/div.
100mV/div.

(79)



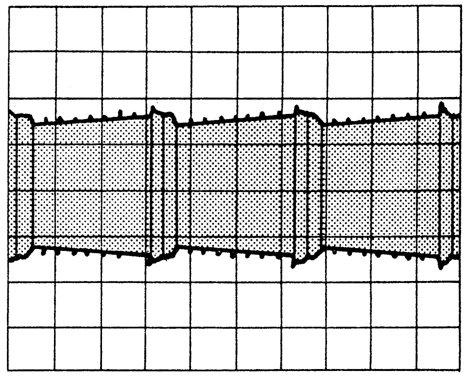
PIN602 pin⑦ (PB)
5ms/div.
200mV/div.

(80)



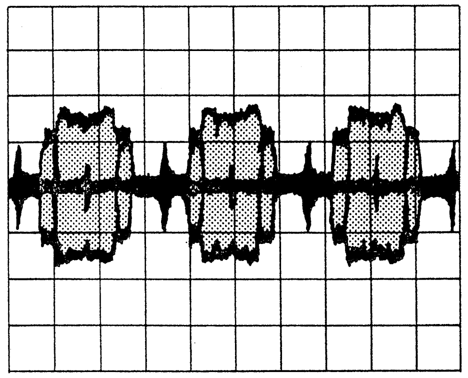
PIN602 pin⑤ (REC)
20 µs/div.
100mV/div.

(81)



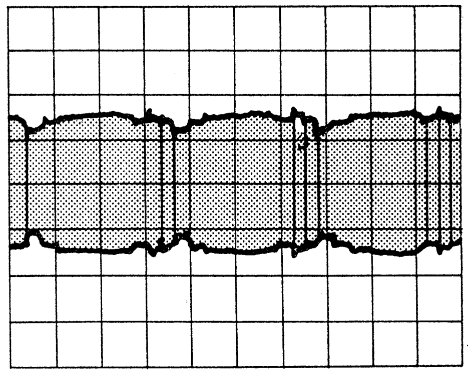
PIN602 pin③ (REC)
20 µs/div.
20mV/div.

(82)

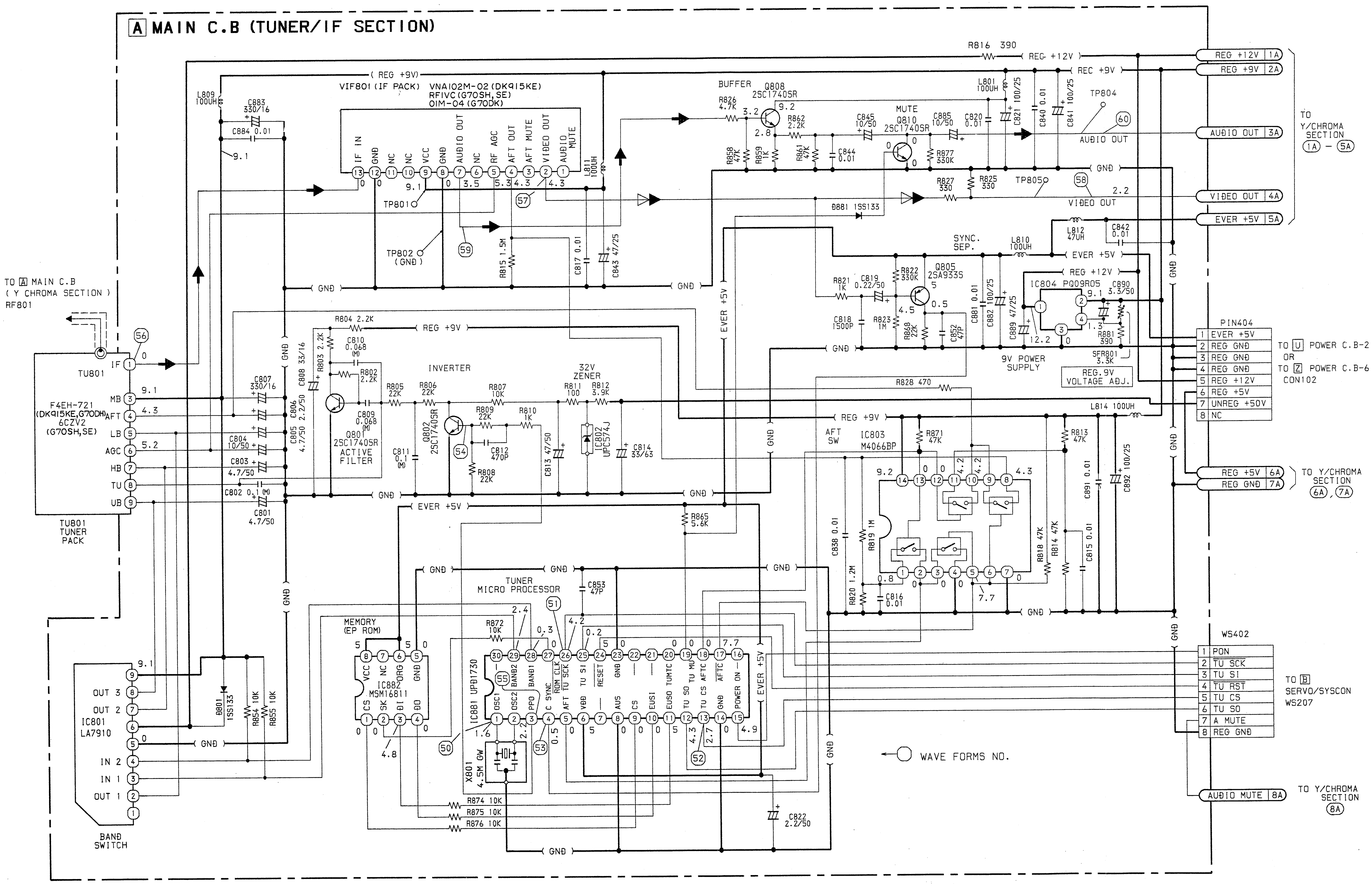


IC610 pin ⑱ (REC)
20 µs/div.
50mV/div.

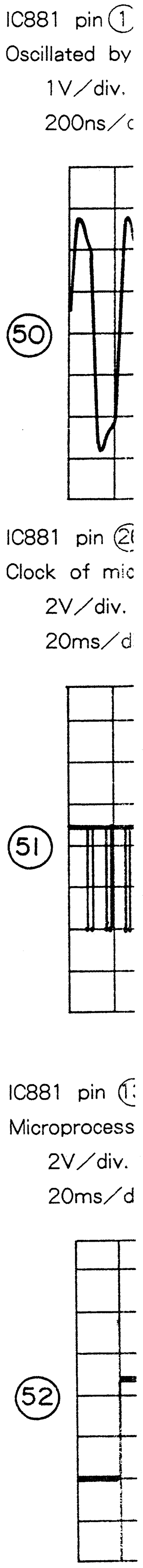
(83)



SCHEMATIC DIAGRAM – 3 (TUNER SECTION)


A MAIN C.B (TUNER/IF SECTION)
VIF801 (IF PACK) VNA102M-02 (DK915KE) RFIVC (G70SH, SE) 01M-04 (G70DK)
IF IN
GND
NC
VCC
AUDIO OUT
RF AGC
AFT OUT
AFT MUTE
VIDEO OUT
AUDIO MUTE
L809 100UH
C883 330/16
C884 0.01
L811 100UH
TP801
TP802 (GND)
R815 1.5M
C817 0.01
C843 47/25
BUFFER Q808 2SC1740SR
R826 4.7K
R858 47K
R859 1K
R862 2.2K
R861 47K
C844 0.01
C845 10/50
MUTE Q810 2SC1740SR
R877 330K
C885 10/50
C820 0.01
L801 100UH
C821 100/25
C840 0.01
C841 100/25
TP804
AUDIO OUT
R816 390
REG +12V
REG +9V
GND
R827 330
R825 330
TP805
VIDEO OUT
D881 1SS133
SYNC. SEP.
L810 100UH
L812 47UH
C842 0.01
EVER +5V
R821 1K
C819 0.22/50
R822 330K
Q805 2SA933S
C818 1500P
R823 1M
R868 22K
C852 47P
C881 0.01
C882 100/25
C889 47/25
IC804 PQ09R05
C890 3.3/50
R881 390
SFR801 3.3K
REG. 9V VOLTAGE ADJ.
9V POWER SUPPLY
TO A MAIN C.B (Y CHROMA SECTION) RF801
TU801
F4EH-721 (DK915KE, G70DH) 6CZV2 (G70SH, SE)
IF
MB
AFT
LB
AGC
HB
TU
UB
TU801 TUNER PACK
C807 330/16
C804 10/50
C803 4.7/50
C802 0.1 (M)
C801 4.7/50
C805 4.7/50
C806 2.2/50
C808 33/16
R804 2.2K
R803 2.2K
C810 0.068 (M)
R802 2.2K
C809 0.068 (M)
Q801 2SC1740SR ACTIVE FILTER
INVERTER
R805 22K
R806 22K
R807 10K
Q802 2SC1740SR
R809 22K
R810 1K
C812 470P
R808 22K
C811 0.1 (M)
C813 47/50
32V ZENER
R811 100
R812 3.9K
IC802 UPC574J
C814 33/63
R828 470
L814 100UH
AFT SW
IC803 M4066BP
R871 47K
R813 47K
C891 0.01
C892 100/25
R865 5.6K
C838 0.01
R819 1M
R820 1.2M
C816 0.01
R818 47K
R814 47K
C815 0.01
TUNER MICRO PROCESSOR
C853 47P
MEMORY (EP ROM)
R872 10K
IC882 MSM16811
CS
SK
DI
DO
ORG
IC881 UPD1730
OSC1
OSC2
BAND2
BAND1
PPO
C SYNC
ROM CLK
TU SCK
AFT
VBB
TU SI
RESET
AUS
CS
EUSI
EUSO
TUMTC
TU SO
TU MU
TU CS
AFTC
POWER ON
X801 4.5M GW
R874 10K
R875 10K
R876 10K
C822 2.2/50
IC801 LA7910
OUT 3
OUT 2
IN 2
IN 1
OUT 1
D801 1SS133
R854 10K
R855 10K
BAND SWITCH
REG +12V 1A
REG +9V 2A
AUDIO OUT 3A
VIDEO OUT 4A
EVER +5V 5A
TO Y/CHROMA SECTION (1A) – (5A)
PIN404
1 EVER +5V
2 REG GND
3 REG GND
4 REG GND
5 REG +12V
6 REG +5V
7 UNREG +50V
8 NC
TO U POWER C.B-2 OR TO Z POWER C.B-6 CON102
REG +5V 6A
REG GND 7A
TO Y/CHROMA SECTION (6A), (7A)
WS402
1 PON
2 TU SCK
3 TU SI
4 TU RST
5 TU CS
6 TU SO
7 A MUTE
8 REG GND
TO B SERVO/SYSCON WS207
AUDIO MUTE 8A
TO Y/CHROMA SECTION (8A)
WAVE FORMS NO.

WAVE F



TO
Y/CHROMA
SECTION
(1A) - (5A)

TO U POWER C.B-2
OR
TO Z POWER C.B-6
CON102

TO Y/CHROMA
SECTION
(6A), (7A)

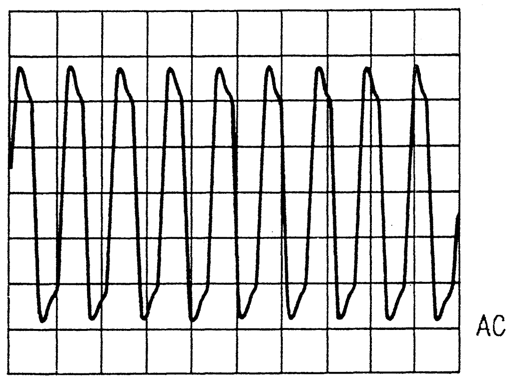
TO B
SERVO/SYSCON
WS207

TO Y/CHROMA
SECTION
(8A)

WAVE FORM – 3 (TUNER WAVE FORM)

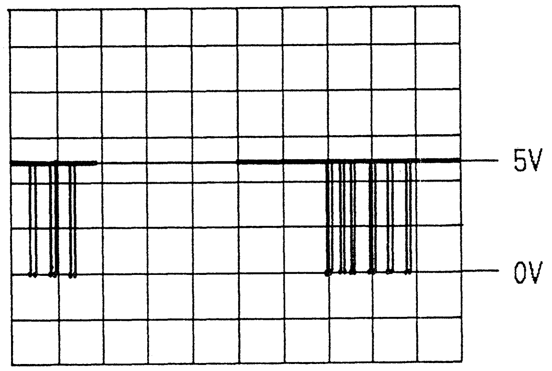
IC881 pin ①
Oscillated by the microprocessor.
1V/div.
200ns/div.

㊿



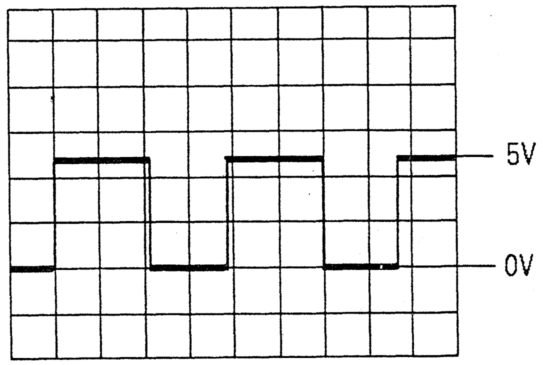
IC881 pin ㉖
Clock of microprocessor.
2V/div.
20ms/div.

(51)



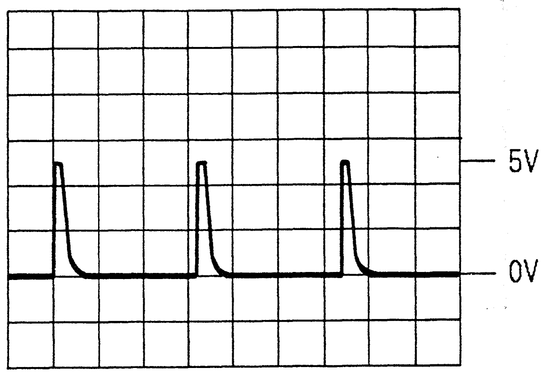
IC881 pin ⑬
Microprocessor chip select.
2V/div.
20ms/div.

(52)



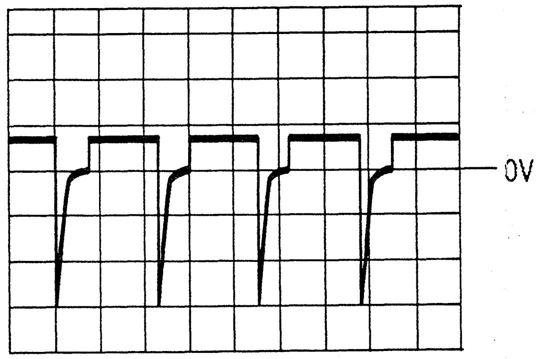
IC881 pin ④
H. sync
2V/div.
20 μs/div.

(53)



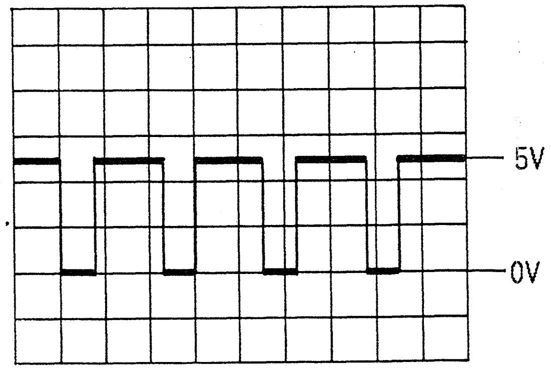
Q802 base
1V/div.
50 μs/div.

(54)



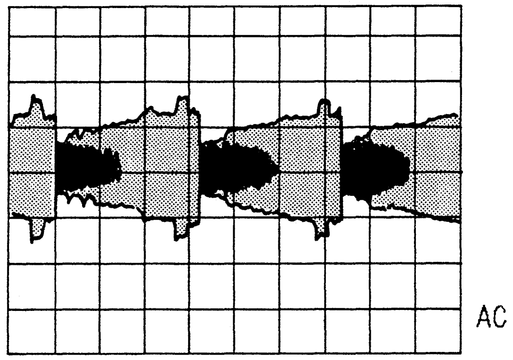
IC881 pin ③
Pulse for generating a tuning voltage.
The pulse width varies for different channels.
2V/div.
50 μs/div.

(55)



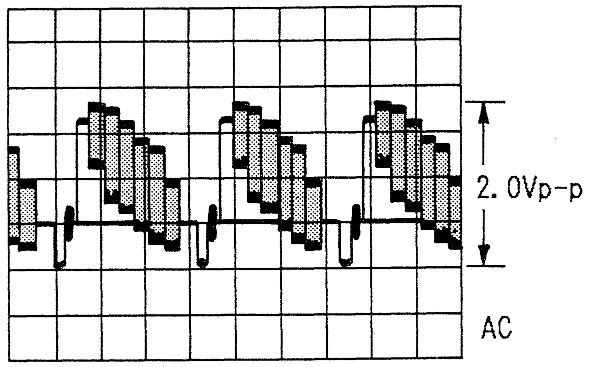
TU801 pin ①
IF signal
P : Color bar signal
50ms/div.
20 μs/div.

(56)



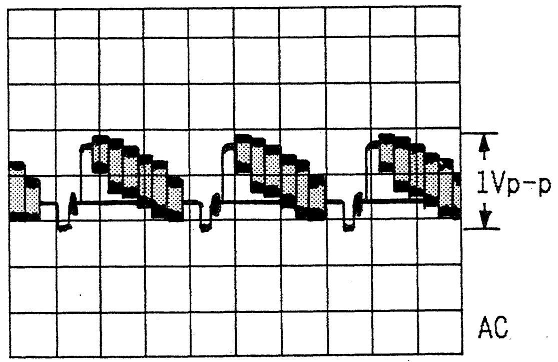
VIF801 pin ②
VIDEO OUT
500mV/div.
20 μs/div.

(57)



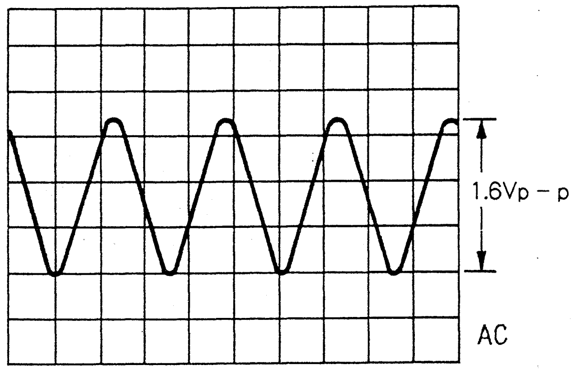
TP805
TU VIDEO OUT 75 Ω TERMINATE
500mV/div.
20 μs/div.

(58)



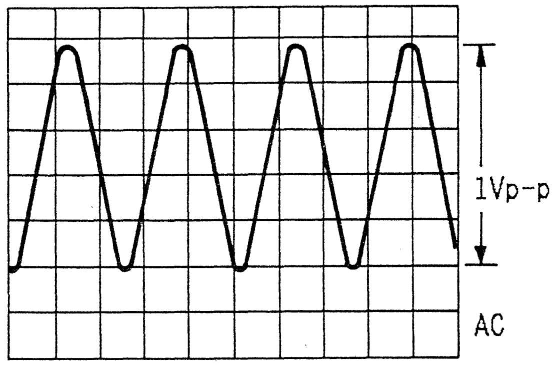
VIF801 pin ⑦
TU AUDIO OUT
When modulated
at 400Hz and 50kHz.
500mV/div.
1ms/div.

(59)



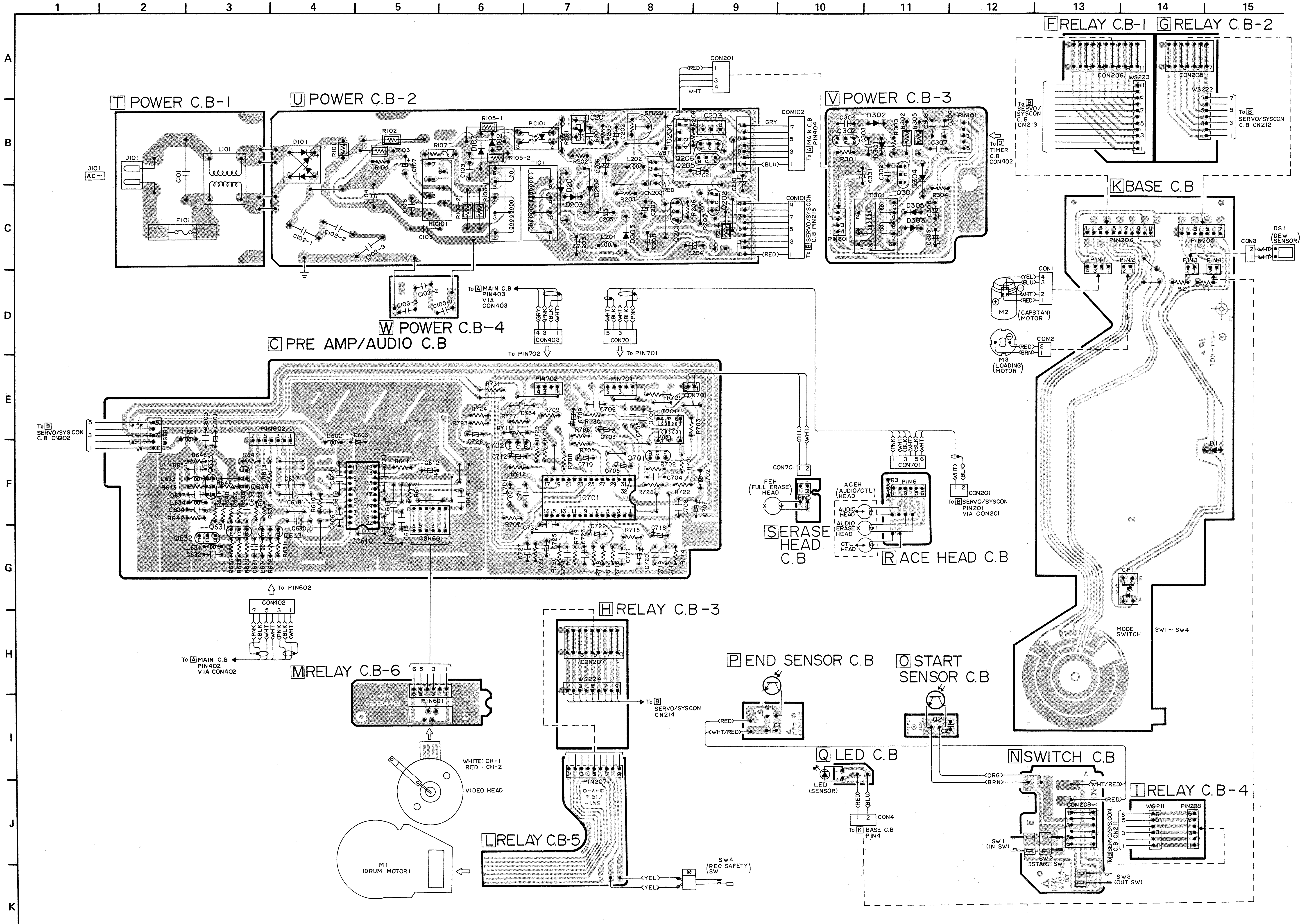
TP804
TU AUDIO OUT
When modulated
at 400Hz and 50kHz.
200mV/div.
1ms/div.

(60)



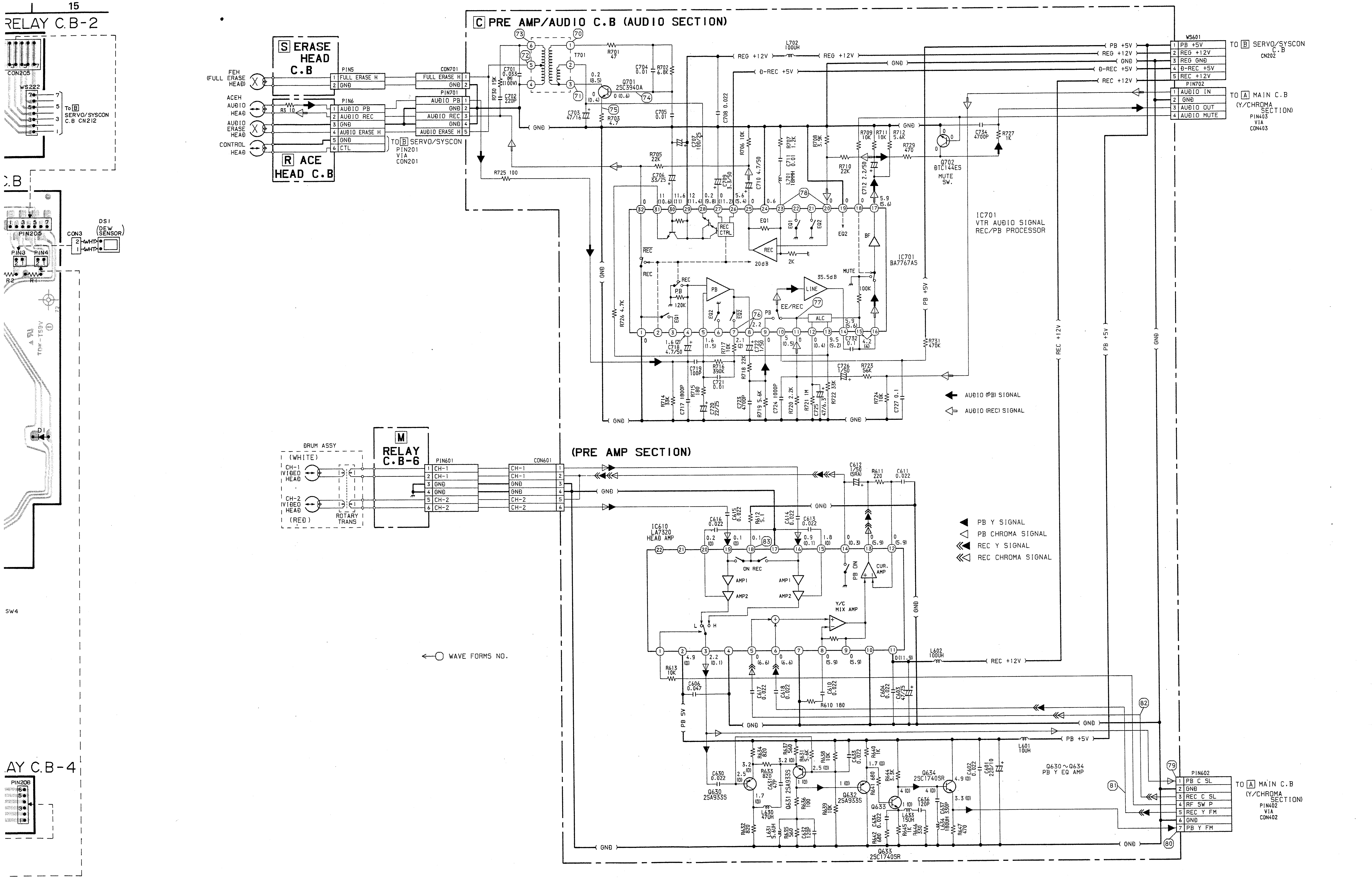
WIRING − 2 (POWER UNIT − 1/PRE AMP./AUDIO/MECHANISM SECTION)

※USE TO POWER UNIT − 1


T POWER C.B-1
U POWER C.B-2
V POWER C.B-3
W POWER C.B-4
C PRE AMP/AUDIO C.B
F RELAY C.B-1
G RELAY C.B-2
H RELAY C.B-3
I RELAY C.B-4
L RELAY C.B-5
M RELAY C.B-6
K BASE C.B
N SWITCH C.B
O START SENSOR C.B
P END SENSOR C.B
Q LED C.B
R ACE HEAD C.B
S ERASE HEAD C.B
J101 AC~
To A MAIN C.B PIN404
To B SERVO/SYSCON C.B PIN215
To D TIMER C.B CON902
To A MAIN C.B PIN403 VIA CON403
To PIN702
To PIN701
To B SERVO/SYS CON C.B CN202
To B SERVO/SYSCON C.B CN213
To B SERVO/SYSCON C.B CN212
To PIN602
To A MAIN C.B PIN402 VIA CON402
To B SERVO/SYSCON CN214
To B SERVO/SYSCON PIN201 VIA CON201
To K BASE C.B PIN4
To B SERVO/SYS.CON. C.B CN211
FEH (FULL ERASE) HEAD
ACEH (AUDIO/CTL) HEAD
AUDIO HEAD
AUDIO ERASE HEAD
CTL HEAD
M2 (CAPSTAN) MOTOR
M3 (LOADING) MOTOR
DS1 (DEW SENSOR)
MODE SWITCH
SW1 ~ SW4
SW1 (IN SW)
SW2 (START SW)
SW3 (OUT SW)
SW4 (REC SAFETY SW)
LED1 (SENSOR)
WHITE : CH-1
RED : CH-2
VIDEO HEAD
M1 (DRUM MOTOR)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
A B C D E F G H I J K

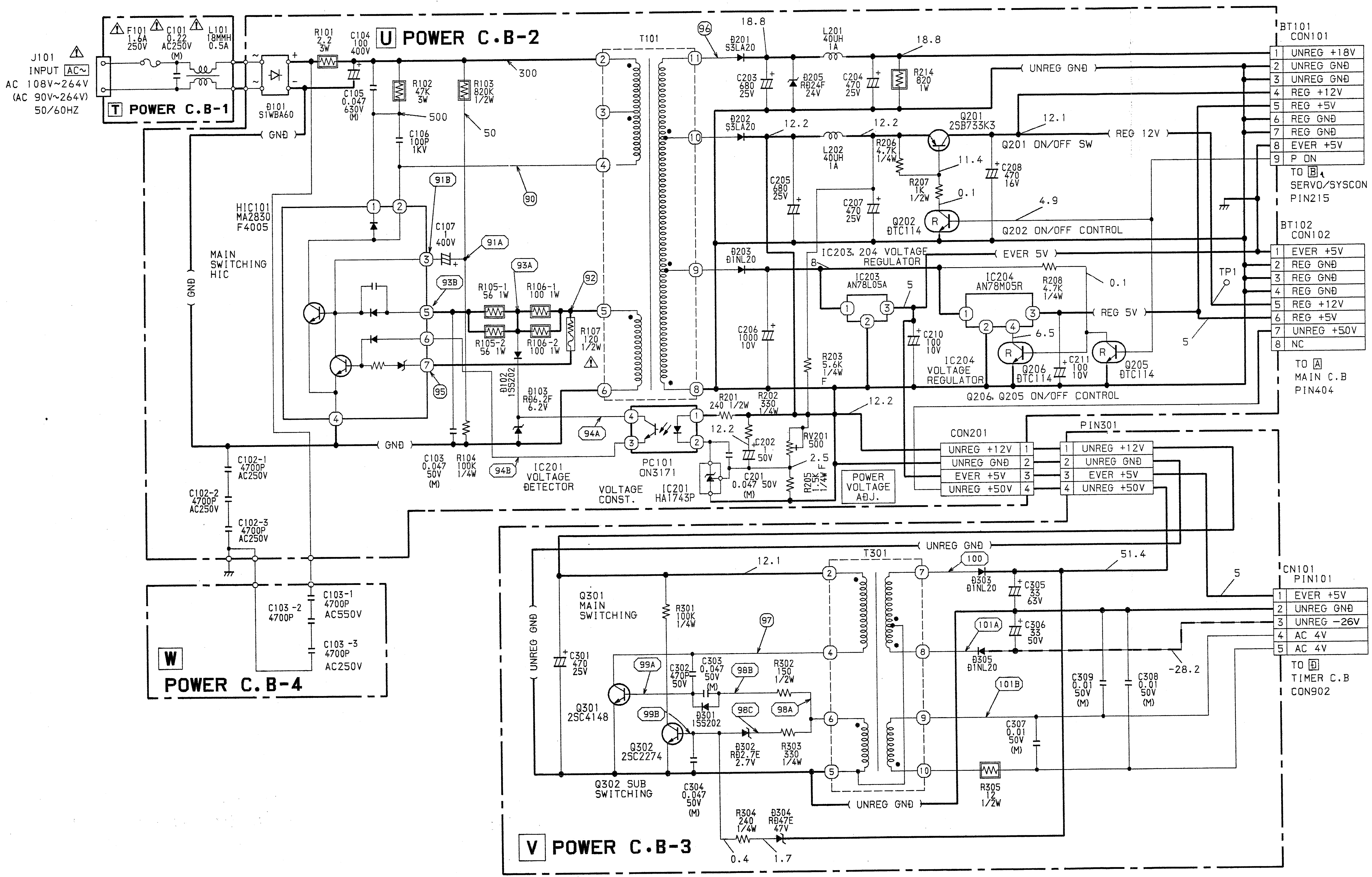
SCHEMATIC DIAGRAM – 4 (PRE AMP./AUDIO SECTION)

※USE TO POWER UNIT – 1



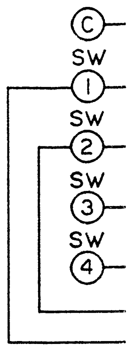
RELAY C.B-2
CON205
WS222
To B SERVO/SYSCON C.B CN212
DS1 (DEW SENSOR)
CON3
PIN205
PIN3
PIN4
D1
SW4
RELAY C.B-4
PIN208
S ERASE HEAD C.B
FEH (FULL ERASE HEAD)
ACEH AUDIO HEAD
AUDIO ERASE HEAD
CONTROL HEAD
R ACE HEAD C.B
PIN5
FULL ERASE H
GND
PIN6
AUDIO PB
AUDIO REC
AUDIO ERASE H
CTL
CON701
PIN701
TO B SERVO/SYSCON PIN201 VIA CON201
C PRE AMP/AUDIO C.B (AUDIO SECTION)
T701
Q701 2SC3940A
REG +12V
D-REC +5V
PB +5V
REC +12V
GND
L702 100UH
WS601
PIN702
TO B SERVO/SYSCON C.B CN202
TO A MAIN C.B (Y/CHROMA SECTION) PIN403 VIA CON403
AUDIO IN
AUDIO OUT
AUDIO MUTE
REG GND
Q702 DTC144ES MUTE SW.
IC701 VTR AUDIO SIGNAL REC/PB PROCESSOR
IC701 BA7767AS
REC CTRL
EQ1
EQ2
REC
PB
LINE
ALC
MUTE
BF
EE/REC
20dB
35.5dB
AUDIO (PB) SIGNAL
AUDIO (REC) SIGNAL
DRUM ASSY
(WHITE)
CH-1 VIDEO HEAD
CH-2 VIDEO HEAD
(RED)
ROTARY TRANS
M RELAY C.B-6
PIN601
CON601
(PRE AMP SECTION)
IC610 LA7320 HEAD AMP
ON REC
AMP1
AMP2
Y/C MIX AMP
CUR. AMP
PB ON
L602 100UH
L601 10UH
PB Y SIGNAL
PB CHROMA SIGNAL
REC Y SIGNAL
REC CHROMA SIGNAL
WAVE FORMS NO.
Q630~Q634 PB Y EQ AMP
Q630 2SA933S
Q631 2SA933S
Q632 2SA933S
Q633 2SC1740SR
Q634 2SC1740SR
PIN602
PB C SL
REC C SL
RF SW P
REC Y FM
PB Y FM
TO A MAIN C.B (Y/CHROMA SECTION) PIN402 VIA CON402

SCHEMATIC DIAGRAM – 5 (POWER UNIT – 1 SECTION)
※USE TO POWER UNIT – 1

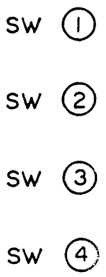

J101 INPUT AC~
AC 108V~264V
(AC 90V~264V)
50/60HZ
T POWER C.B-1
F101 1.6A 250V
C101 0.22 AC250V (M)
L101 18MMH 0.5A
D101 S1WBA60
GND
U POWER C.B-2
R101 2.2 3W
C104 100 400V
C105 0.047 630V (M)
R102 47K 3W
R103 820K 1/2W
C106 100P 1KV
300
500
50
90
91B
91A
93A
93B
92
94A
94B
95
96
HIC101 MA2830 F4005
MAIN SWITCHING HIC
C107 1 400V
R105-1 56 1W
R106-1 100 1W
R105-2 56 1W
R106-2 100 1W
R107 120 1/2W
D102 1SS202
D103 RD6.2F 6.2V
C103 0.047 50V (M)
R104 100K 1/4W
IC201 VOLTAGE DETECTOR
C102-1 4700P AC250V
C102-2 4700P AC250V
C102-3 4700P AC250V
T101
18.8
D201 S3LA20
L201 40UH 1A
C203 680 25V
D205 RD24F 24V
C204 470 25V
R214 820 1W
D202 S3LA20
12.2
L202 40UH 1A
R206 4.7K 1/4W
Q201 2SB733K3
12.1
Q201 ON/OFF SW
REG 12V
UNREG GND
11.4
C208 470 16V
R207 1K 1/2W
0.1
4.9
C205 680 25V
C207 470 25V
Q202 DTC114
Q202 ON/OFF CONTROL
D203 D1NL20
IC203, 204 VOLTAGE REGULATOR
EVER 5V
IC203 AN78L05A
5
IC204 AN78M05R
R208 4.7K 1/4W
0.1
REG 5V
C206 1000 10V
C210 100 10V
6.5
IC204 VOLTAGE REGULATOR
R203 5.6K 1/4W F
Q206 DTC114
C211 100 10V
Q205 DTC114
Q206, Q205 ON/OFF CONTROL
R201 240 1/2W
R202 330 1/4W
12.2
C202 1 50V
RV201 500
2.5
C201 0.047 50V (M)
R205 1.5K 1/4W F
PC101 ON3171
VOLTAGE CONST.
IC201 HA1743P
POWER VOLTAGE ADJ.
TP1
BT101 CON101
1 UNREG +18V
2 UNREG GND
3 UNREG GND
4 REG +12V
5 REG +5V
6 REG GND
7 REG GND
8 EVER +5V
9 P ON
TO B SERVO/SYSCON C.B PIN215
BT102 CON102
1 EVER +5V
2 REG GND
3 REG GND
4 REG GND
5 REG +12V
6 REG +5V
7 UNREG +50V
8 NC
TO A MAIN C.B PIN404
CON201
UNREG +12V 1
UNREG GND 2
EVER +5V 3
UNREG +50V 4
PIN301
1 UNREG +12V
2 UNREG GND
3 EVER +5V
4 UNREG +50V
W POWER C.B-4
C103-2 4700P
C103-1 4700P AC550V
C103-3 4700P AC250V
V POWER C.B-3
UNREG GND
12.1
T301
51.4
100
D303 D1NL20
C305 33 63V
101A
C306 33 50V
D305 D1NL20
-28.2
101B
Q301 MAIN SWITCHING
R301 100K 1/4W
97
C301 470 25V
99A
C302 470P 50V
C303 0.047 50V (M)
98B
R302 150 1/2W
Q301 2SC4148
99B
D301 1SS202
98C
98A
Q302 2SC2274
D302 RD2.7E 2.7V
R303 330 1/4W
Q302 SUB SWITCHING
C304 0.047 50V (M)
R304 240 1/4W
D304 RD47E 47V
0.4
1.7
C309 0.01 50V (M)
C308 0.01 50V (M)
C307 0.01 50V (M)
R305 12 1/2W
CN101 PIN101
1 EVER +5V
2 UNREG GND
3 UNREG -26V
4 AC 4V
5 AC 4V
TO D TIMER C.B CON902
5

SYSTEM

STRUCTUR

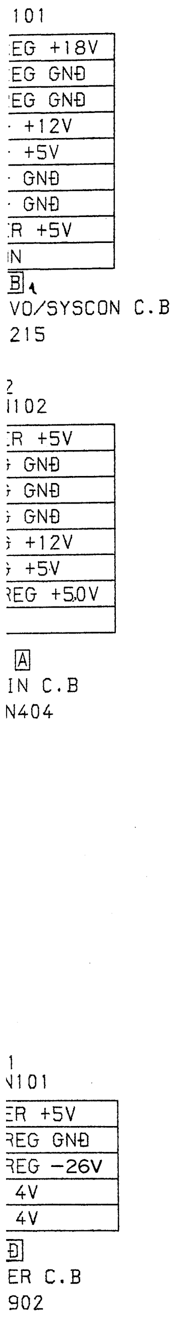

C
SW
1
SW
2
SW
3
SW
4

SWITCH S
DIAGRAM


SW 1
SW 2
SW 3
SW 4

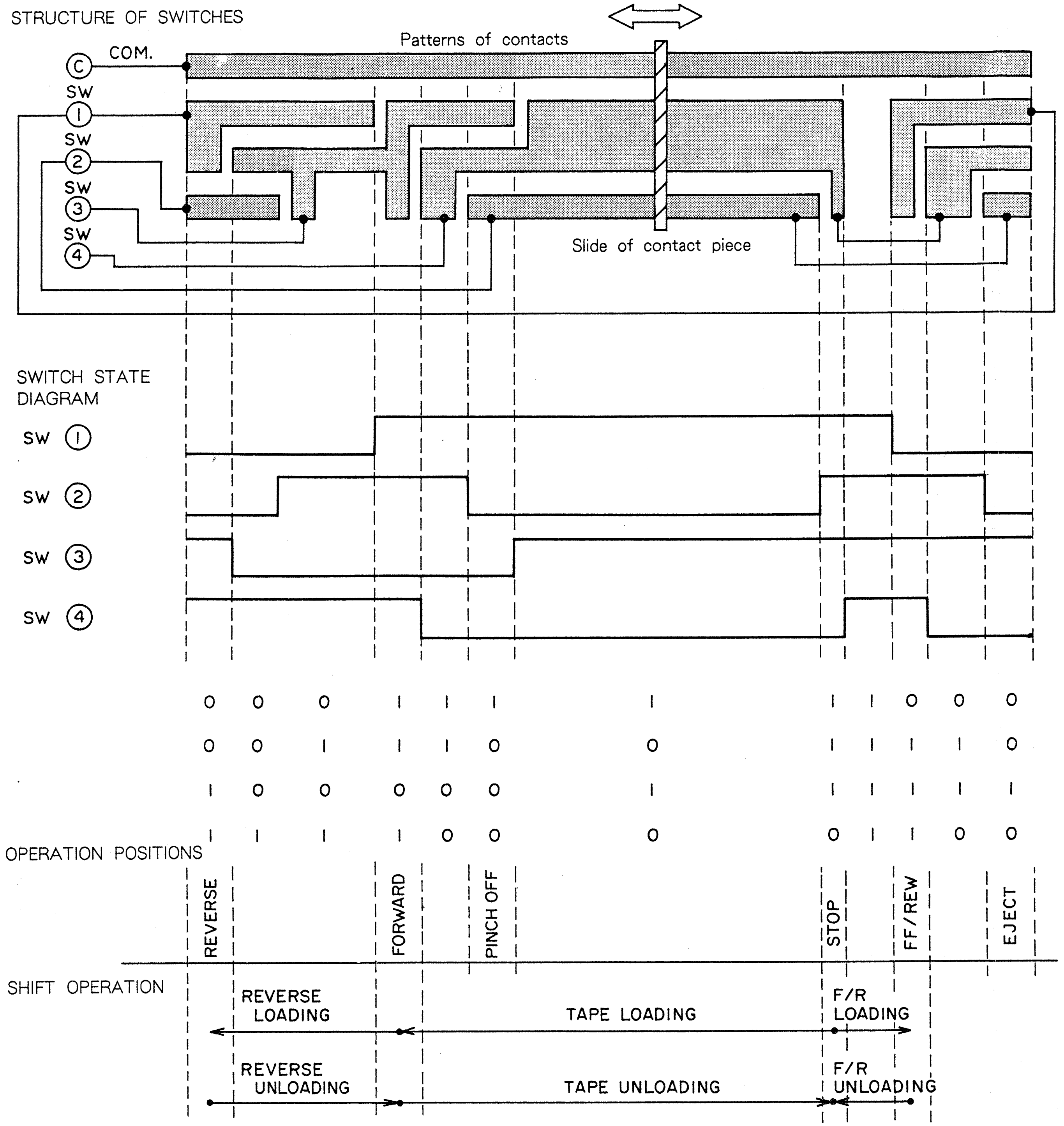
OPERATION

SHIFT OPE


101
EG +18V
EG GND
EG GND
+12V
+5V
GND
GND
R +5V
N
VO/SYSCON C.B
215
2
1102
R +5V
GND
GND
GND
+12V
+5V
EG +5.0V
IN C.B
N404
1
N101
R +5V
REG GND
REG -26V
4V
4V
ER C.B
902

SYSTEM SWITCH MODE

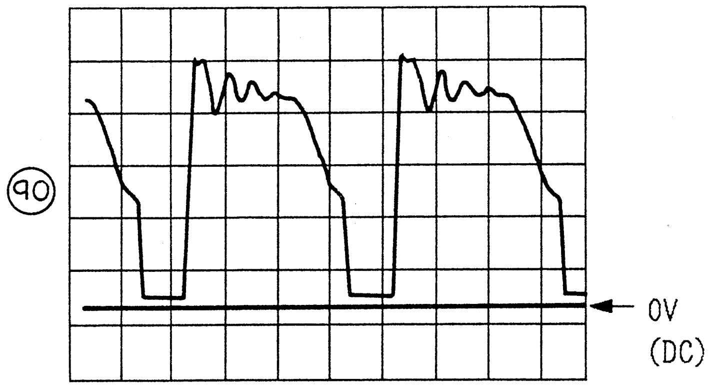
※When SYSTEM CONTROL IC has run away
SYSTEM CONTROL IC will not accept any mode.


STRUCTURE OF SWITCHES
Patterns of contacts
COM.
Ⓒ
SW ①
SW ②
SW ③
SW ④
Slide of contact piece
SWITCH STATE DIAGRAM
SW ①
SW ②
SW ③
SW ④
O O O I I I I I I O O O
O O I I I O O I I I I O
I O O O O O I I I I I I
I I I I O O O O I I O O
OPERATION POSITIONS
REVERSE
FORWARD
PINCH OFF
STOP
FF/REW
EJECT
SHIFT OPERATION
REVERSE LOADING
TAPE LOADING
F/R LOADING
REVERSE UNLOADING
TAPE UNLOADING
F/R UNLOADING

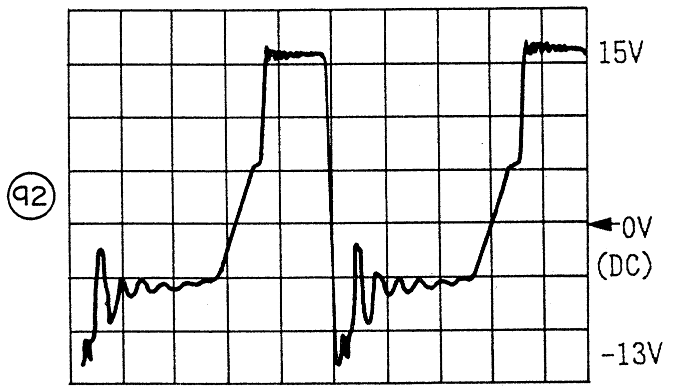
SWITCH				Position
SW1	SW2	SW3	SW4	
0	0	1	0	Front loading, Eject
0	1	1	0	Intermediate
0	1	1	1	F.F, REW
1	1	1	1	Intermediate
1	1	1	0	Stop
1	0	1	0	Tape loading
1	0	0	0	Gear change
1	1	0	0	Intermediate
1	1	0	1	Play (Pause)
0	1	0	1	Intermediate
0	0	0	1	Intermediate
0	0	1	1	Reset

WAVE FORM – 4 (POWER UNIT – 1 WAVE FORM)

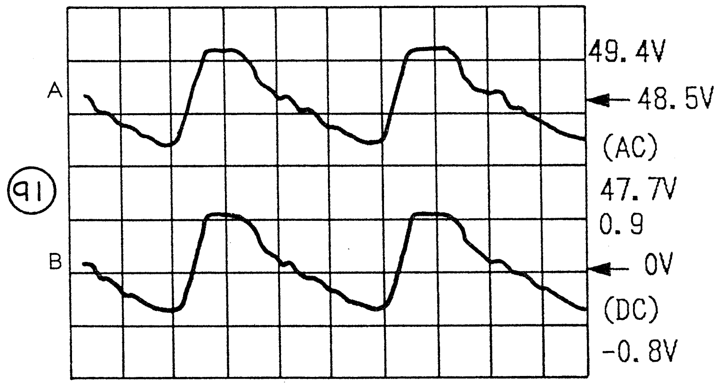
- HIC101 pin② WAVE FORM
(T101 pin④)
500Vp-p
200 µs/div.



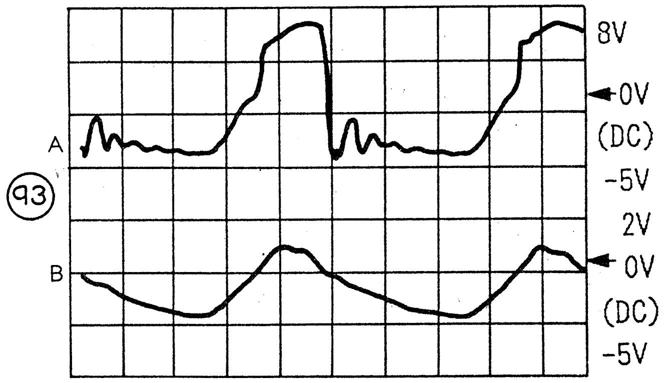
- T101 pin⑤
5V/div.
2 µs/div.



- C107⊕ SIDE (⑼ – A)
1V/div.
2 µs/div.
- C107⊖ SIDE (HIC101 pin③) (⑼ – B)
1V/div.
2 µs/div.



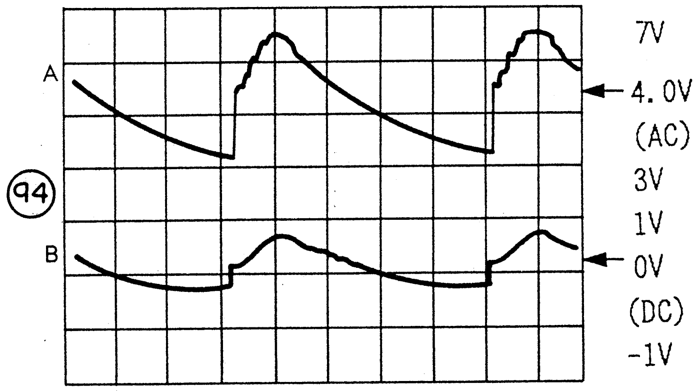
- D102 ANODE SIDE (⑬ – A)
5V/div.
2 µs/div.
- HIC101 pin⑤ (⑬ – B)
5V/div.
2 µs/div.



※ • When checking wave forms (90) – 95), connect the negative (–) terminal of C104 to ground (GND on primary side).
• When checking wave forms (96) and (101), connect pin 2 of CON101 to ground (GND on secondary side).
• Wave forms should be measured in the PB mode and with AC 220V power input.

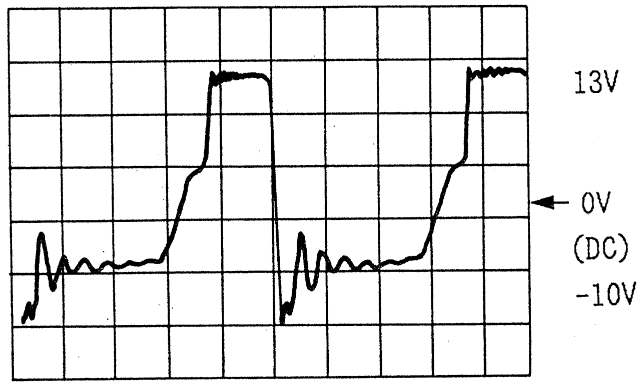
- D102 CATHOD SIDE ((94) – A)
  2V/div.
  2 µS/div.
- HIC101 pin⑥ ((94) – B)
  2V/div.
  2 µs/div.

(94)



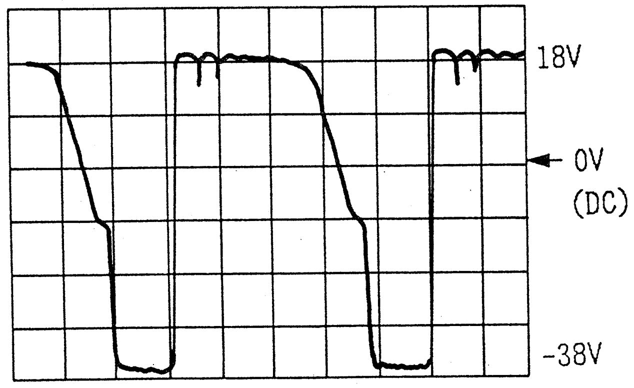
- HIC101 pin⑦
  5V/div.
  2 µs/div.

(95)



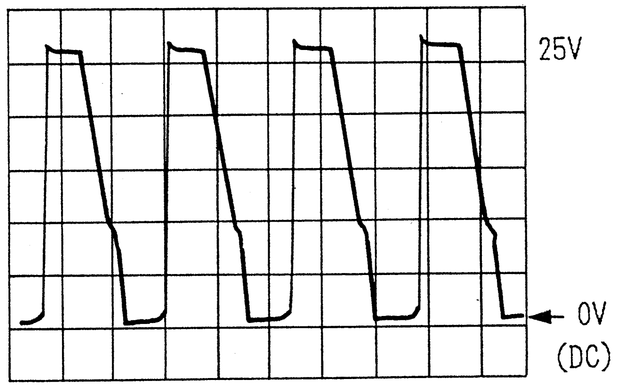
- T101 pin ⑪
  10V/div.
  2 µs/div.

(96)



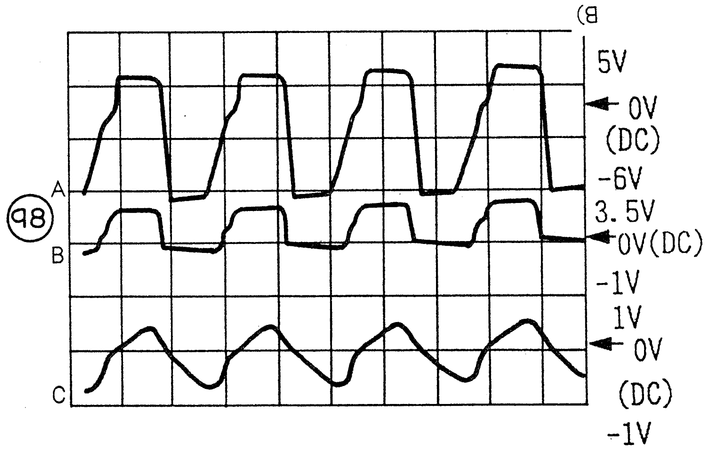
- Q301 COLLECTOR SIDE
  5V/div.
  2 µs/div.

(97)



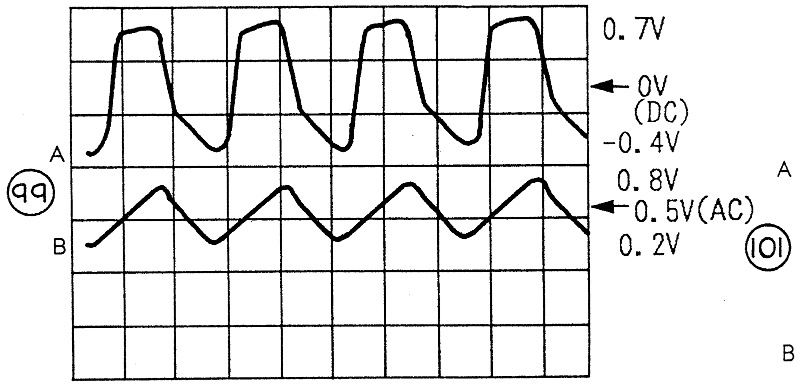
- T301 pin⑥ ((98) – A)
  5V/div.
  2 µs/div.
- D302 CATHOD SIDE ((98) – C)
  5V/div.
  2 µs/div.
- D301 ANODE SIDE ((98) – B)
  2V/div.
  2 µs/div.

(98)



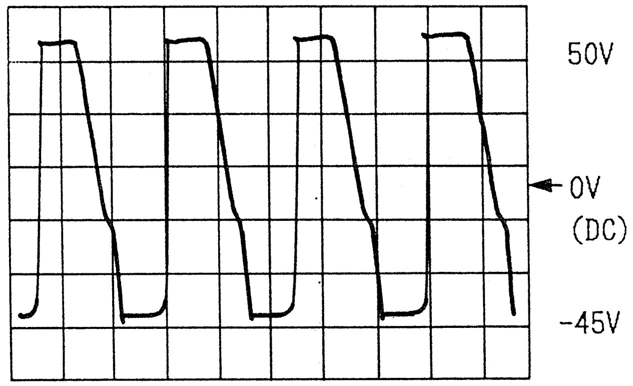
- Q301 BASE SIDE ((99) -A)
  0.5V/div.
  2 µs/div.
- Q302 BASE SIDE ((99) -B)
  0.5V/div.
  2 µs/div.

(99)



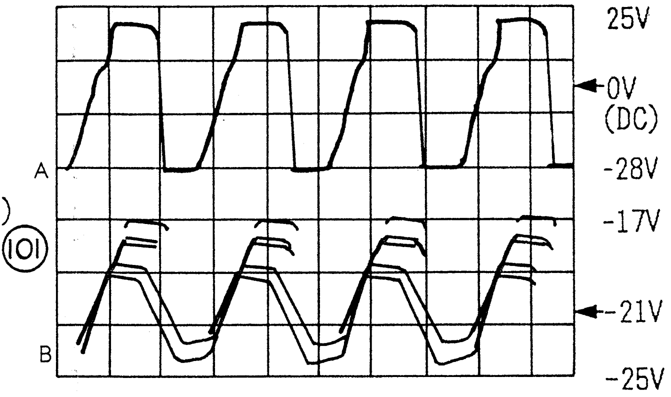
- D303 ANODE SIDE
  20V/div.
  2 µs/div.

(100)



- T301 pin⑧ ((101) -A)
  20V/div.
  2 µs/div.
- T301 pin⑨ ((101) -B)
  2V/div.
  2 µs/div.

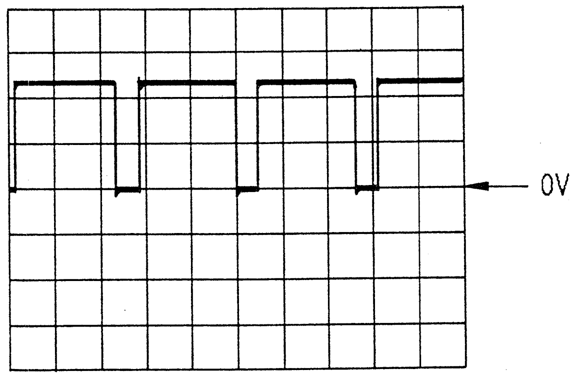
(101)



TIMER WAVE FORM

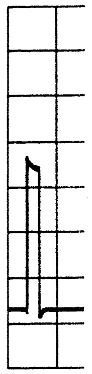
Q901 DTC144E Base
2ms/div.
2V/div.

(110)



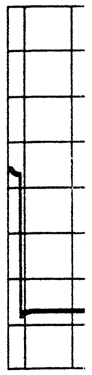
Anode voltag
IC901 pin
2ms/div.
10V/div.

(111)



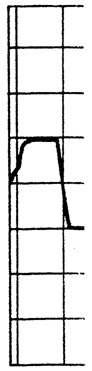
Grid voltage
IC901 pin (
2ms/div.
10V/div.

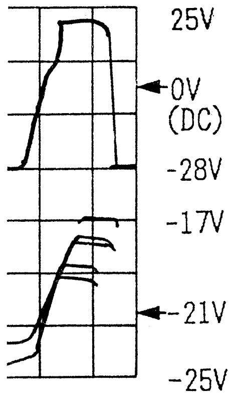
(112)

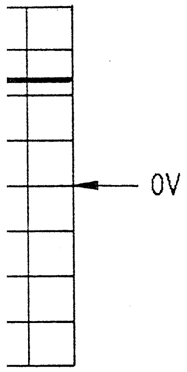


Filament volt
CON902 pi
AC range
2 µs/div
5V/div.

(113)

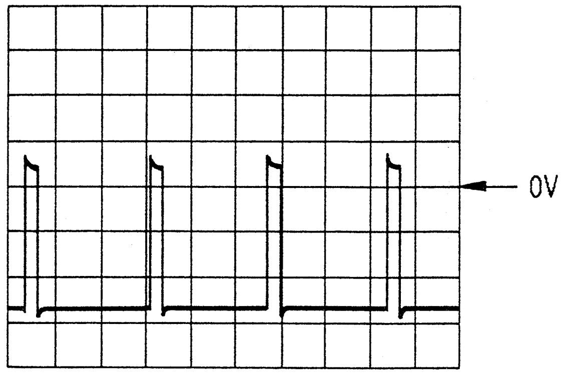






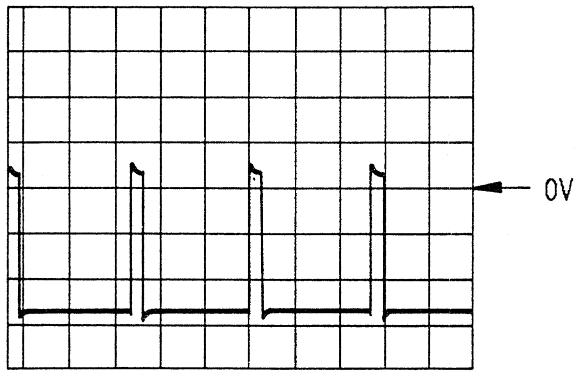
Anode voltage
IC901 pin (58) : S9
2ms/div.
10V/div.

(111)



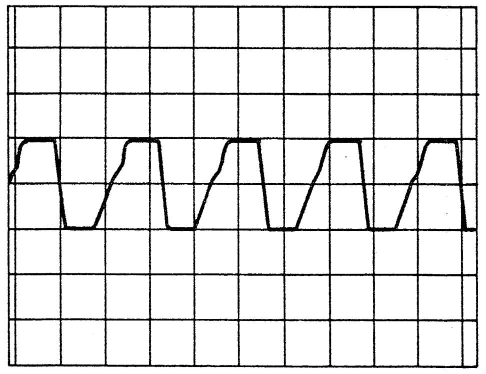
Grid voltage
IC901 pin ㊵ : T0
2ms/div.
10V/div.

(112)



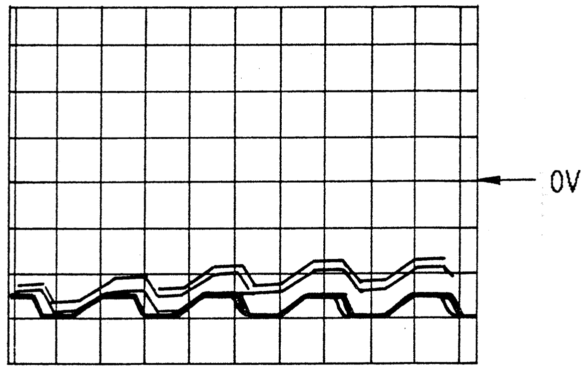
Filament voltage
CON902 pin ⑤ : AC 4V
AC range
2 µs/div.
5V/div.

(113)



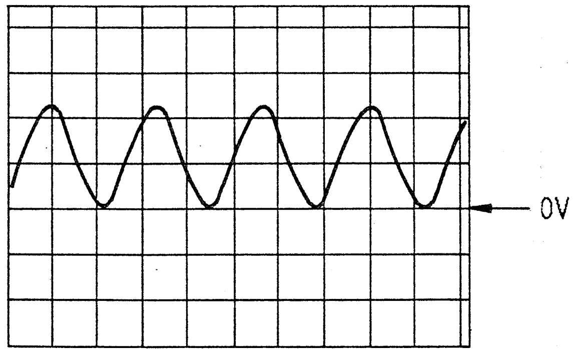
Filament voltage
CON902 pin ⑤ : AC 4V
DC range
2 µs/div.
10V/div.

(114)



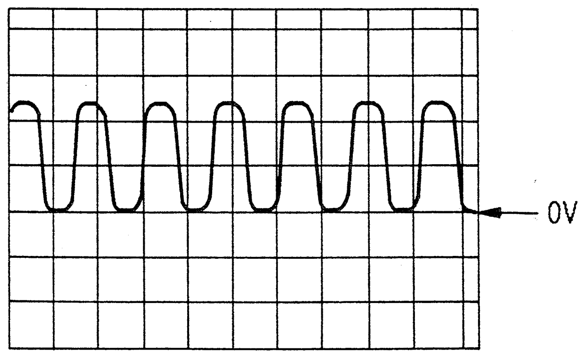
Main clock
IC901 pin ㉛ : x
4.19MHz
100ns/div.
2V/div.

(115)



Sub-clock
IC901 pin ㉞ : XT
32.768kHz
20 µs/div.
2V/div.

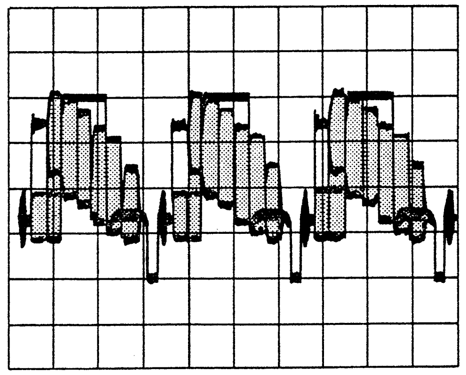
(116)



WAVE FORM – 5 (VIDEO WAVE FORM)

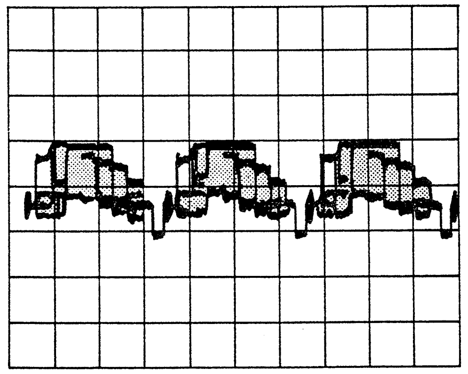
IC411 pin ㉑ (PB)
20 µs/div.
500mV/div.
LINE OUT 75 Ω TERMINATE

①



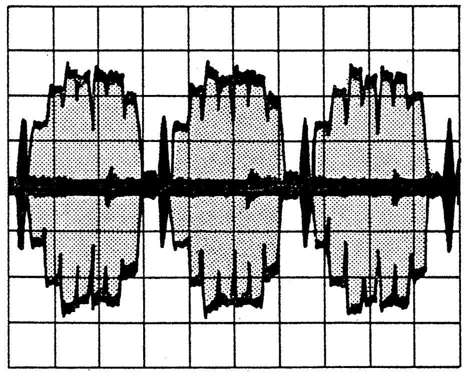
LINE OUT
20 µs/div.
500mV/div.
LINE OUT 75 Ω TERMINATE

②



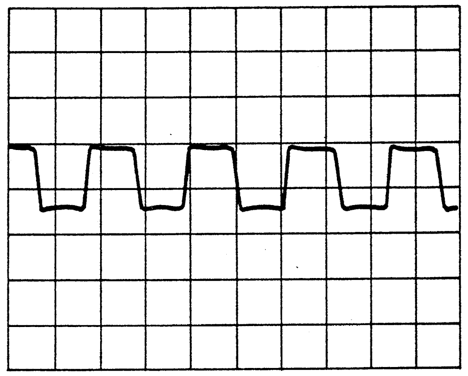
IC411 pin ⑲ (PB)
20 µs/div.
50mV/div.

③



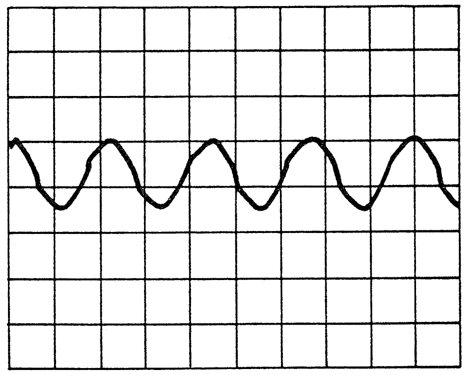
IC461 pin ⑱ (PB)
100ns/div.
500mV/div.

④



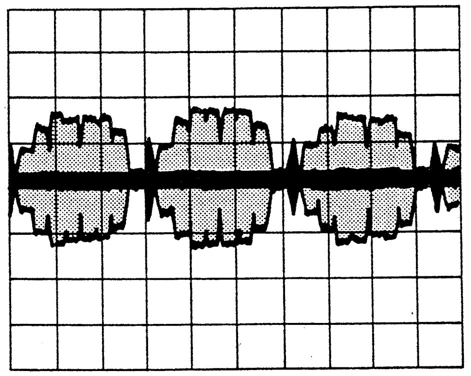
IC461 pin ⑲ (PB)
100ns/div.
500mV/div.

⑤



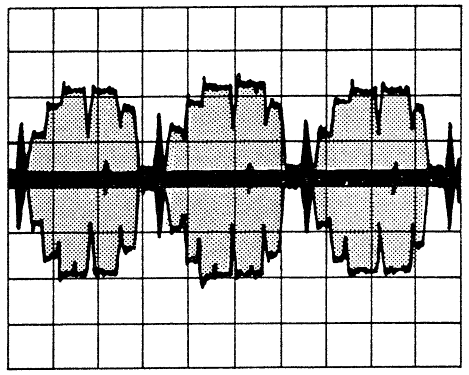
IC461 pin ⑤ (PB)
20 µs/div.
500mV/div.

⑥



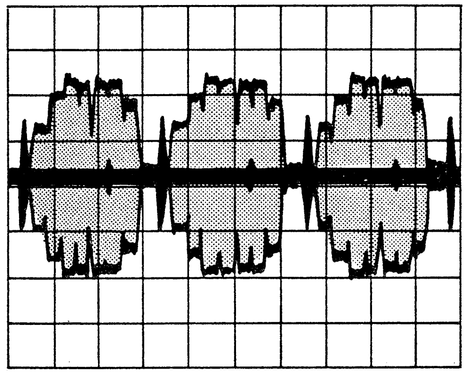
IC461 pin ③ (PB)
20 µs/div.
50mV/div.

⑦



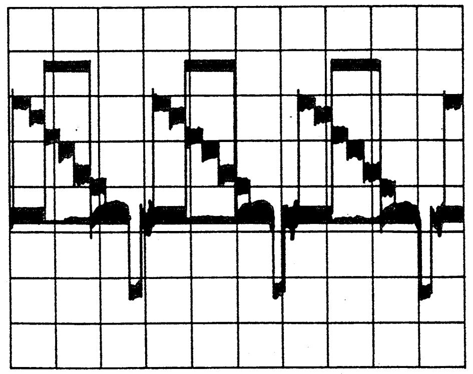
IC461 pin ㉔ (PB)
20 µs/div.
50mV/div.

⑧



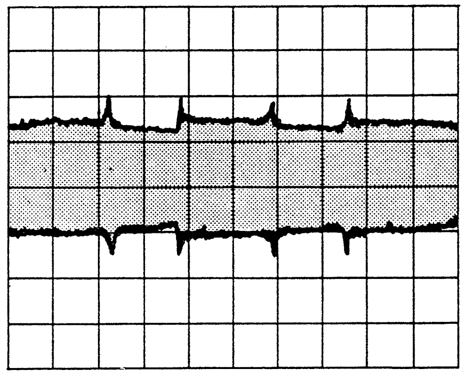
IC411 pin ⑨ (PB)
20 µs/div.
100mV/div.

⑨



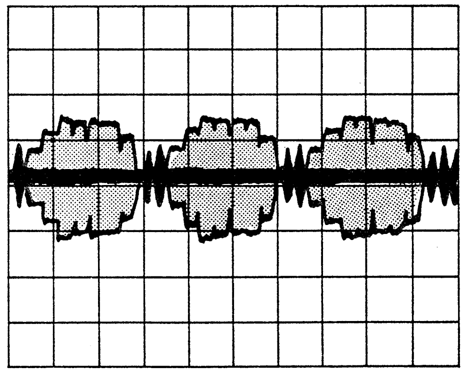
PIN402 pin ① (PB)
5ms/div.
100mV/div.

⑩



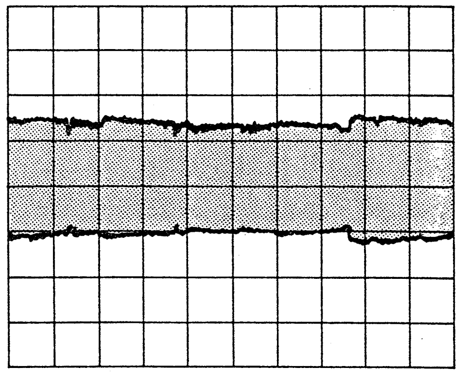
IC461 pin ⑦ (PB)
20 µs/div.
100mV/div.

⑪



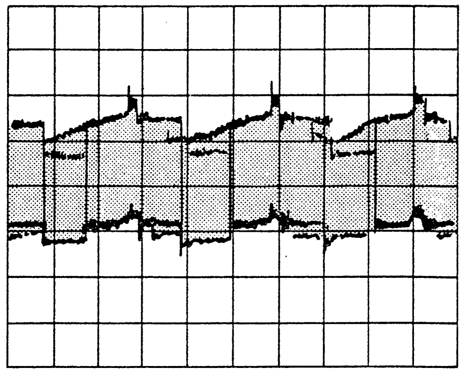
PIN402 pin ⑦ (PB)
5ms/div.
200mV/div.

⑫



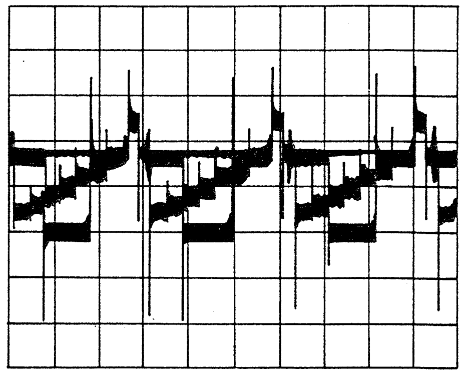
IC411 pin ⑦ (PB)
20 µs/div.
500mV/div.

⑬



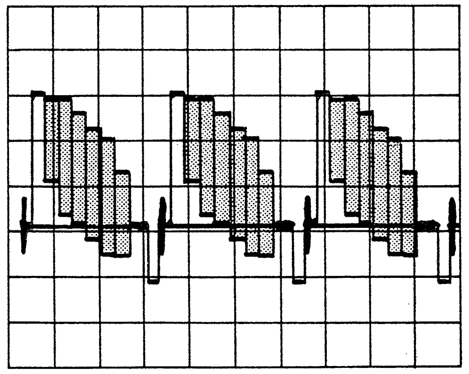
FIL411 OUT (PB)
20 µs/div.
100mV/div.

⑭



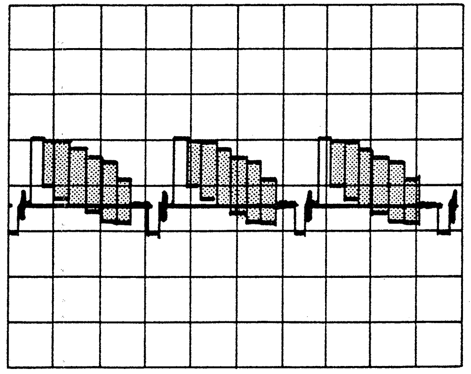
IC411 pin ㉑ (EE)
20 µs/div.
500mV/div.

⑮



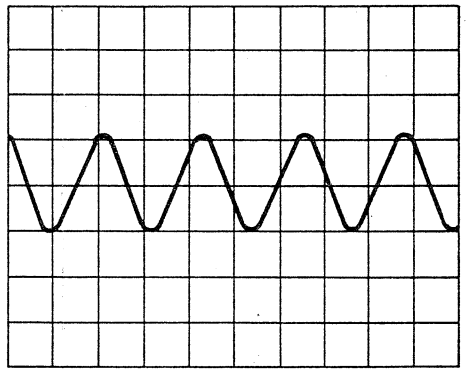
LINE OUT (EE)
20 µs/div.
500mV/div.

⑯



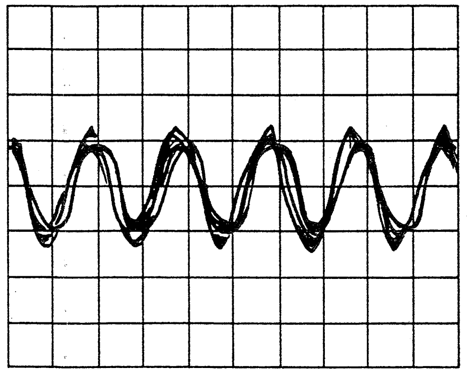
IC461 pin ⑲ (EE)
100ns/div.
500mV/div.

⑰



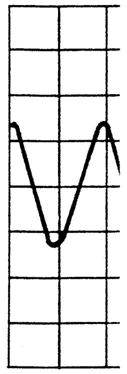
IC461 pin ⑬
100ns/div.
100mV/div.

⑱



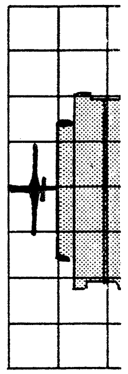
IC461 pin ⑪
100ns/div.
100mV/div

⑲



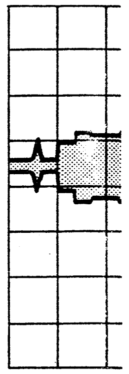
IC461 pin ⑨ (E
200mV/div.
20 µs/div.

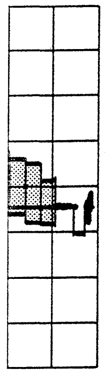
⑳

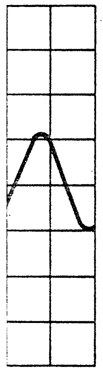


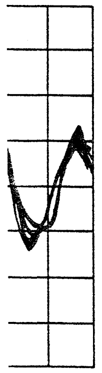
PIN402 pin ③ (
50mV/div.
20 µs/div.

㉑



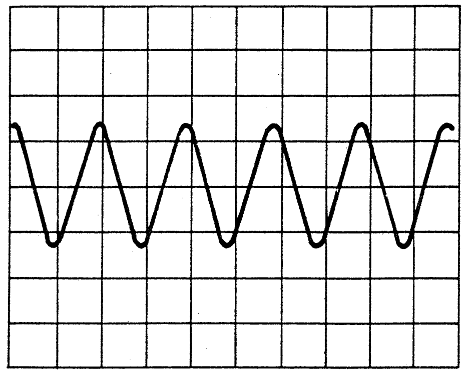






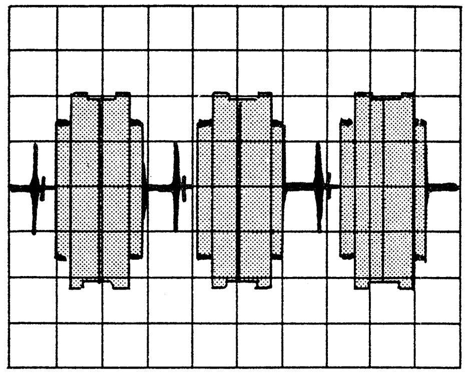
IC461 pin ⑪
100ns/div.
100mV/div.

⑲



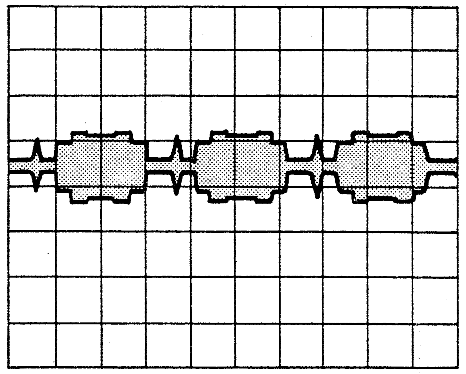
IC461 pin ⑨ (EE)
200mV/div.
20 μs/div.

⑳



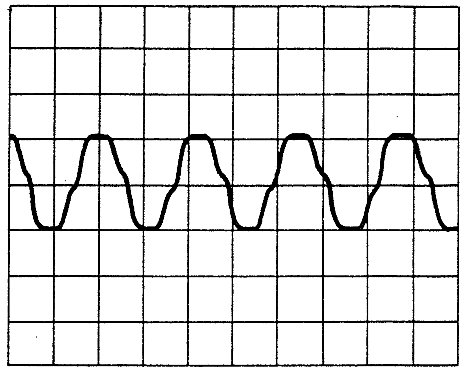
PIN402 pin ③ (EE)
50mV/div.
20 μs/div.

㉑



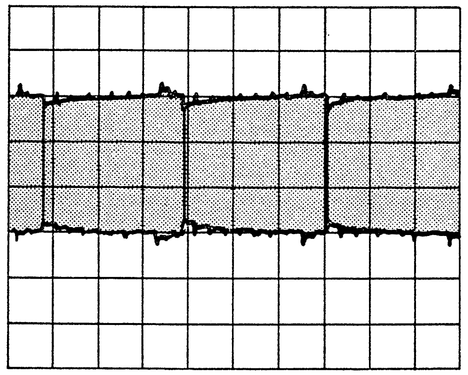
IC461 pin ⑱ (EE)
50mV/div.
100ns/div.

㉒



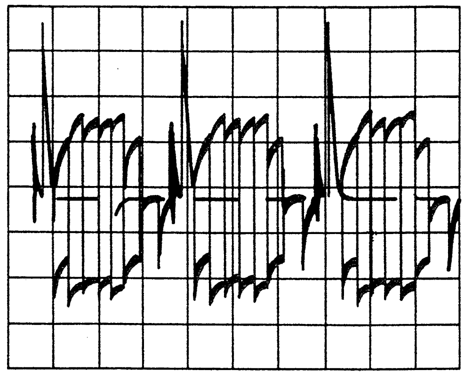
PIN402 pin ⑤ (EE)
100mV/div.
20 μs/div.

㉓



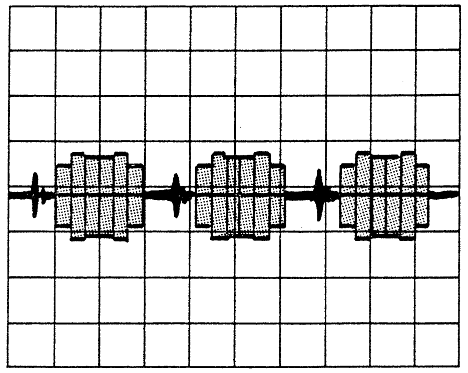
IC461 pin ⑤ (EE)
100mV/div.
20 μs/div.

㉔



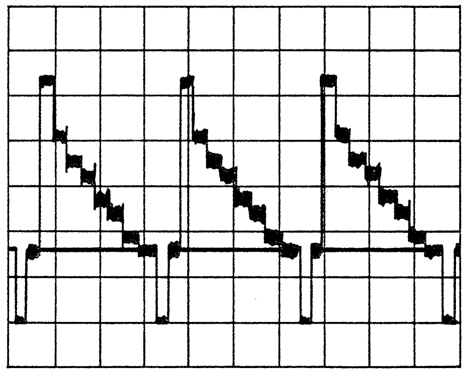
IC461 pin ③ (EE)
50mV/div.
20 μs/div.

㉕



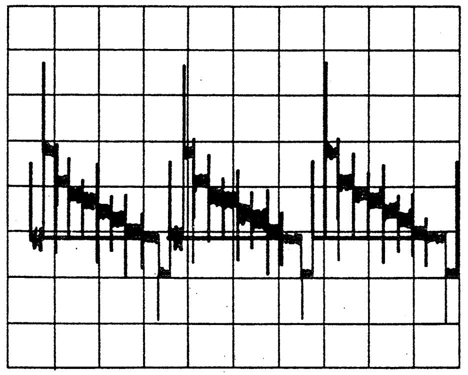
IC411 pin ⑥ (EE)
20 μs/div.
100mV/div.

㉖



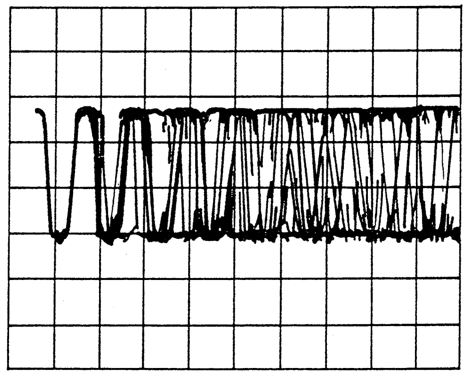
IC411 pin ② (EE)
20 μs/div.
200mV/div.

㉗



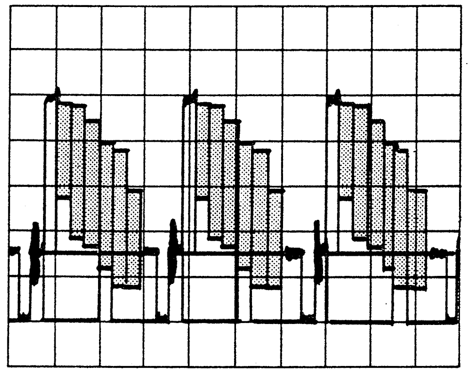
IC411 pin ㉚ (EE)
200ns/div.
500mV/div.

㉘



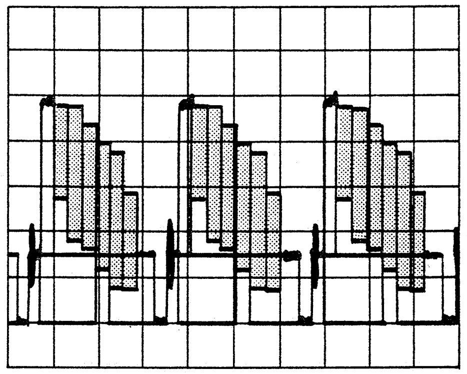
LINE IN (EE)
20 μs/div.
200mV/div.

㉙



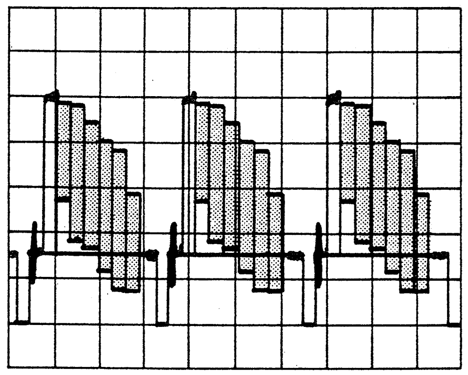
IC411 pin 24 (EE)
20 μs/div.
200mV/div.

㉚



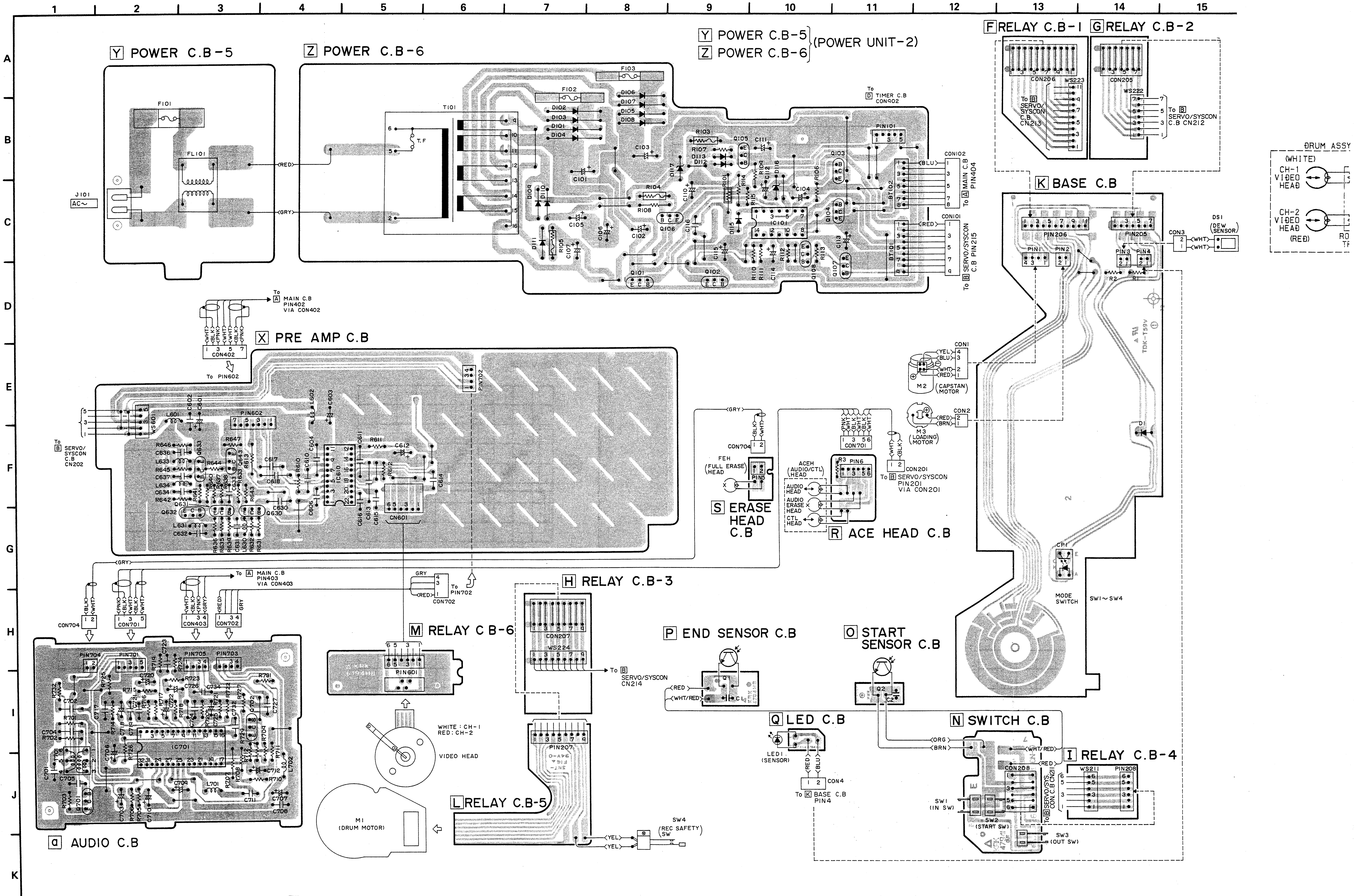
IC411 pin ⑦ (EE)
20 μs/div.
200mV/div.

㉛



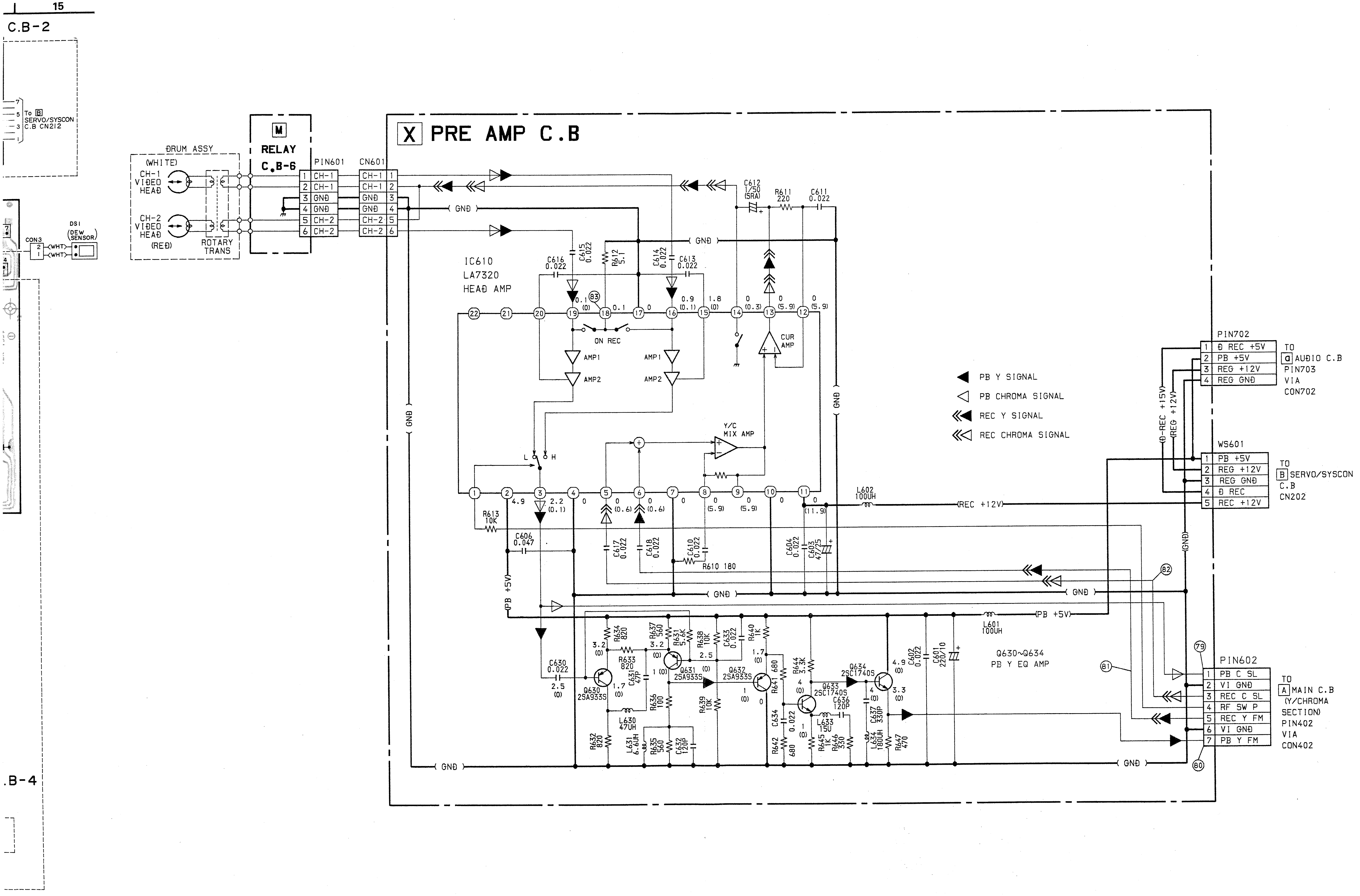
WIRING – 3 (POWER UNIT – 2/PRE AMP./AUDIO/MECHANISM SECTION)
※ USE TO POWER UNIT – 2

SCHEMATIC D
※ USE TO F



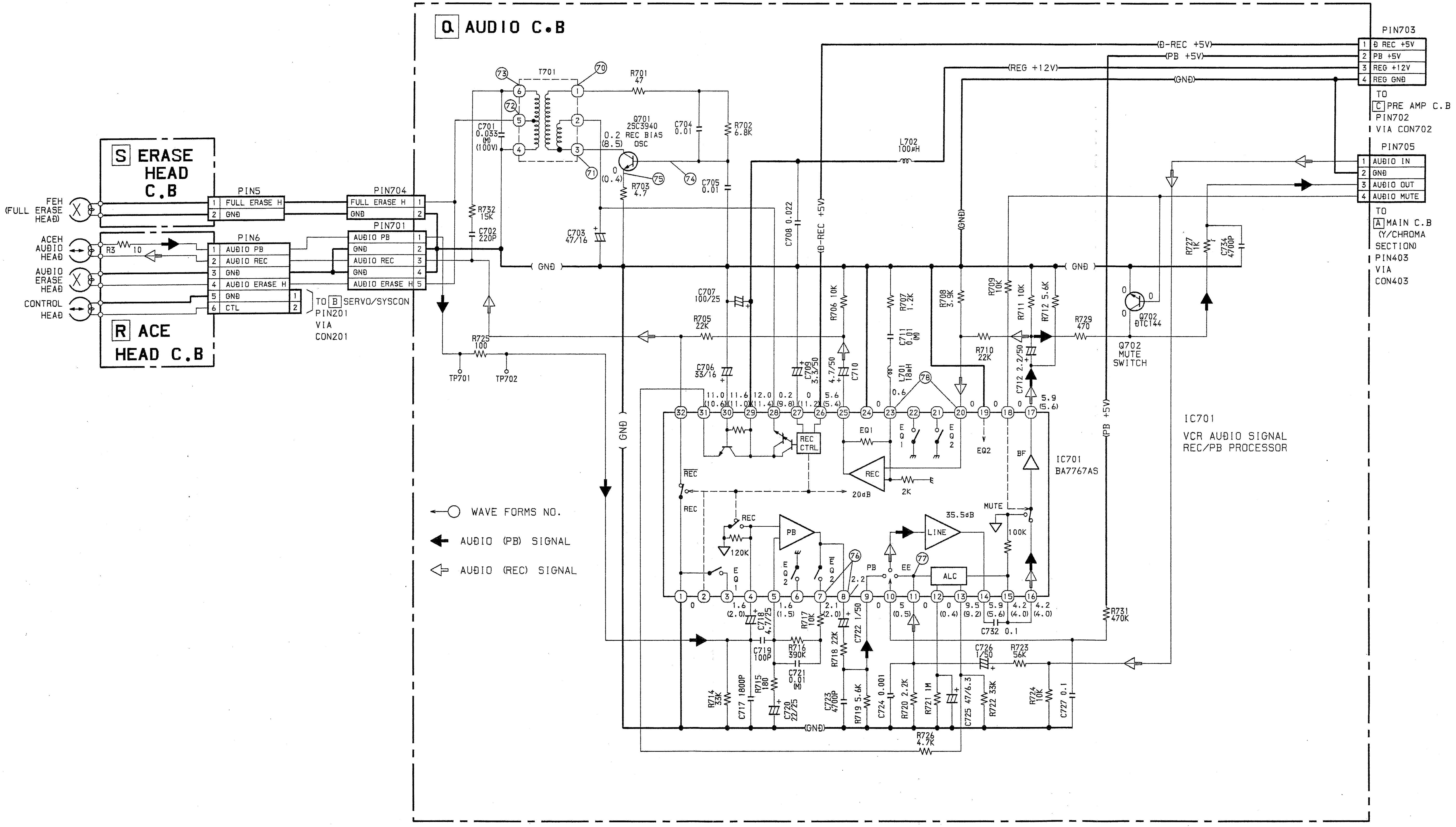
Y POWER C.B-5
Z POWER C.B-6
Y POWER C.B-5 / Z POWER C.B-6 (POWER UNIT-2)
J101 AC~
F101
FL101
F102
F103
T101
T,F
D101 D102 D103 D104 D106 D107 D105 D108
IC101
Q101 Q102 Q103 Q104 Q105 Q106 Q107 Q108
To D TIMER C.B CON902
PIN101
CON102 To A MAIN C.B PIN404
CON101 To B SERVO/SYSCON C.B PIN215
To A MAIN C.B PIN402 VIA CON402
CON402
To PIN602
X PRE AMP C.B
To B SERVO/SYSCON C.B CN202
PIN602
PIN702
IC610
CN601
F RELAY C.B-1
G RELAY C.B-2
CON206
WS223
To B SERVO/SYSCON C.B CN213
CON205
WS222
To B SERVO/SYSCON C.B CN212
K BASE C.B
PIN206
PIN205
PIN1 PIN2 PIN3 PIN4
CON3
DS1 (DEW SENSOR)
CON1
M2 (CAPSTAN MOTOR)
CON2
M3 (LOADING MOTOR)
CON201
To B SERVO/SYSCON PIN201 VIA CON201
CON701
PIN6
ACEH (AUDIO/CTL) HEAD
AUDIO HEAD
AUDIO ERASE HEAD
CTL HEAD
R ACE HEAD C.B
CON704
FEH (FULL ERASE) HEAD
PIN5
S ERASE HEAD C.B
CP1
MODE SWITCH
SW1~SW4
D1
R1 R2
TDK-T59V
To A MAIN C.B PIN403 VIA CON403
CON750
To PIN702
CON704
CON701
CON403
CON702
PIN704 PIN701 PIN705 PIN703
IC701
a AUDIO C.B
M RELAY C.B-6
PIN601
WHITE : CH-1
RED : CH-2
VIDEO HEAD
M1 (DRUM MOTOR)
H RELAY C.B-3
CON207
WS224
To B SERVO/SYSCON CN214
PIN207
L RELAY C.B-5
SW4 (REC SAFETY SW)
P END SENSOR C.B
O START SENSOR C.B
Q LED C.B
LED1 (SENSOR)
CON4
To K BASE C.B PIN4
N SWITCH C.B
CON208
To B SERVO/SYS. CON. C.B CN211
SW1 (IN SW)
SW2 (START SW)
SW3 (OUT SW)
I RELAY C.B-4
WS211
PIN208
DRUM ASSY
(WHITE)
CH-1 VIDEO HEAD
CH-2 VIDEO HEAD
(RED)

SCHEMATIC DIAGRAM – 6 (PRE AMP. SECTION)
※ USE TO POWER UNIT – 2


15
C.B-2
To B SERVO/SYSCON C.B CN212
DS1 (DEW SENSOR)
CON3
(WHT)
.B-4
DRUM ASSY
(WHITE)
CH-1 VIDEO HEAD
CH-2 VIDEO HEAD
(RED)
ROTARY TRANS
M
RELAY C.B-6
PIN601
CN601
CH-1
GND
CH-2
X PRE AMP C.B
IC610 LA7320 HEAD AMP
ON REC
AMP1
AMP2
CUR AMP
Y/C MIX AMP
C612 1/50 (SRA)
R611 220
C611 0.022
C616 0.022
C615 0.022
R612 5.1
C614 0.022
C613 0.022
R613 10K
C606 0.047
C617 0.022
C618 0.022
C610 0.022
R610 180
C604 0.022
C603 47/25
L602 100UH
(REC +12V)
(PB +5V)
L601 100UH
C630 0.022
Q630 2SA933S
R632 820
L630 47UH
L631 6.6UH
R634 820
R633 820
C631 47P
R636 100
R635 560
C632 120P
R637 560
R631 5.6K
Q631 2SA933S
R638 10K
R639 10K
C633 0.022
R640 1K
Q632 2SA933S
R641 680
C634 0.022
R642 680
R644 3.3K
Q633 2SC1740S
L633 15U
C636 120P
R645 1K
R646 330
Q634 2SC1740S
C637 330P
L634 180UH
R647 470
C602 0.022
C601 220/10
Q630~Q634 PB Y EQ AMP
PB Y SIGNAL
PB CHROMA SIGNAL
REC Y SIGNAL
REC CHROMA SIGNAL
PIN702
1 Ð REC +5V
2 PB +5V
3 REG +12V
4 REG GND
TO a AUDIO C.B PIN703 VIA CON702
(Ð-REC +15V)
(REG +12V)
WS601
1 PB +5V
2 REG +12V
3 REG GND
4 Ð REC
5 REC +12V
TO B SERVO/SYSCON C.B CN202
PIN602
1 PB C SL
2 VI GND
3 REC C SL
4 RF SW P
5 REC Y FM
6 VI GND
7 PB Y FM
TO A MAIN C.B (Y/CHROMA SECTION) PIN402 VIA CON402
79
80
81
82
83

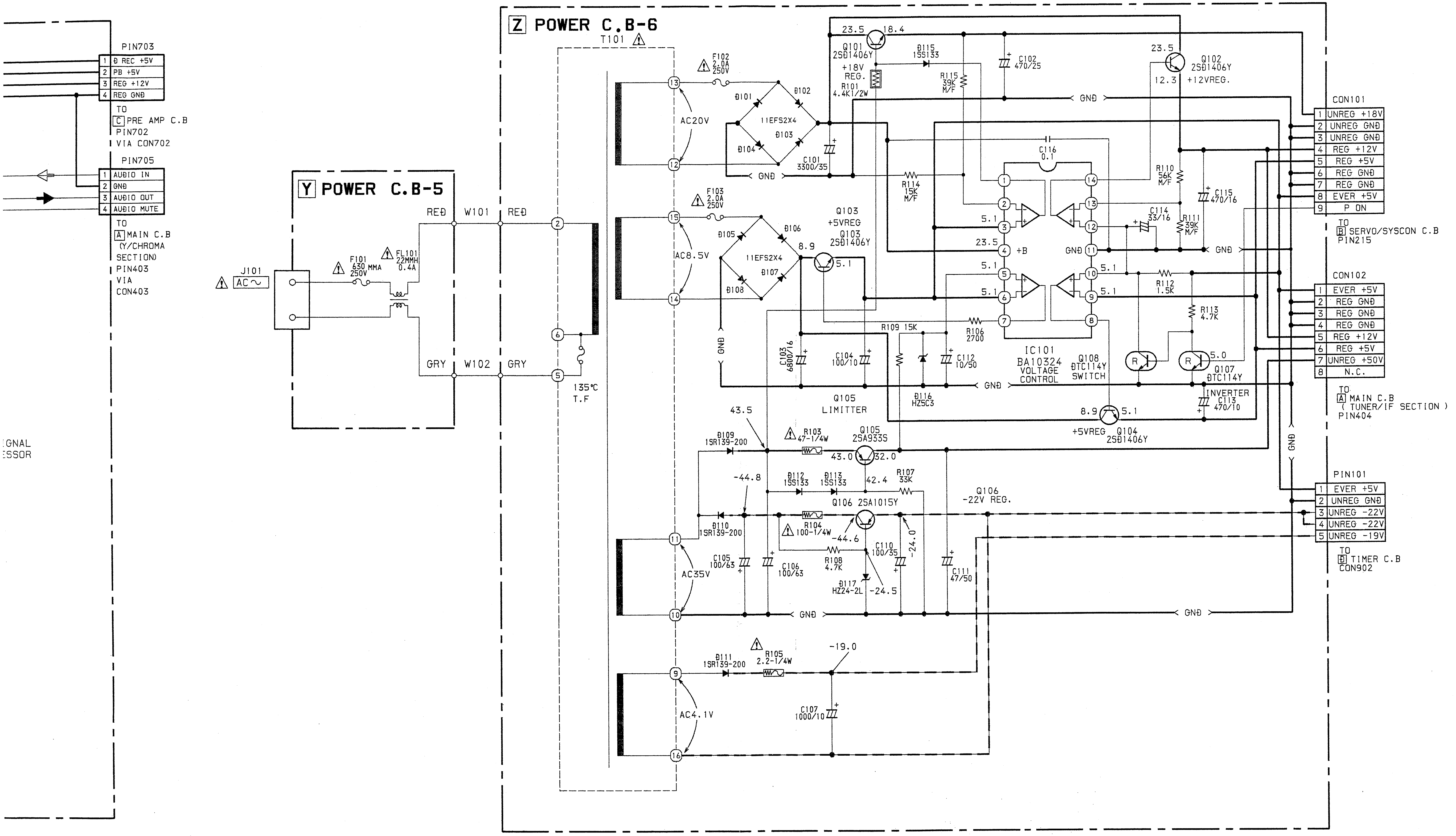
SCHEMATIC DIAGRAM – 7 (AUDIO SECTION)

※USE TO POWER UNIT – 2

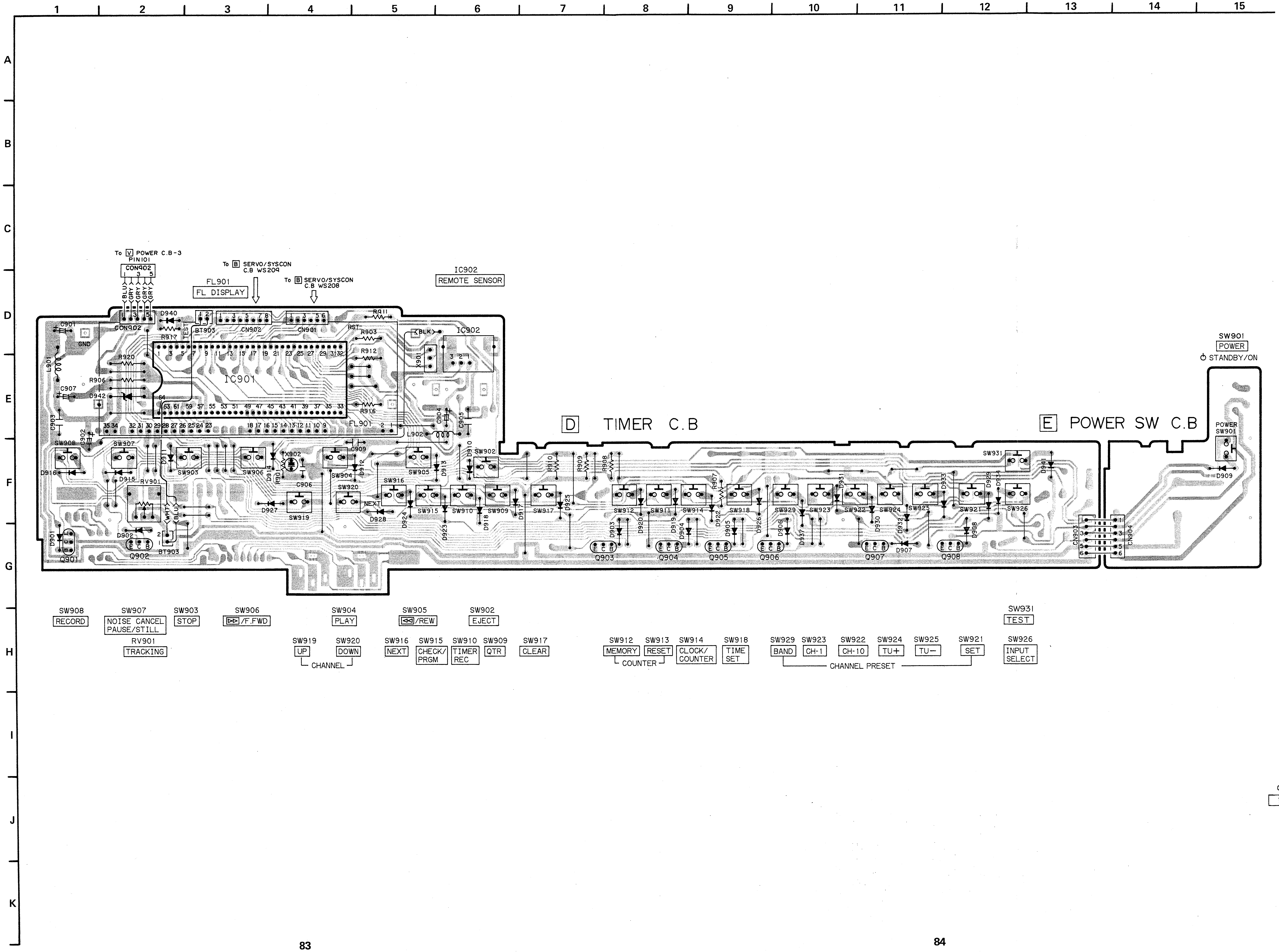


Q AUDIO C.B
S ERASE HEAD C.B
R ACE HEAD C.B
FEH (FULL ERASE HEAD)
ACEH AUDIO HEAD
AUDIO ERASE HEAD
CONTROL HEAD
PIN5
1 FULL ERASE H
2 GND
PIN6
1 AUDIO PB
2 AUDIO REC
3 GND
4 AUDIO ERASE H
5 GND
6 CTL
TO B SERVO/SYSCON PIN201 VIA CON201
PIN704
1 FULL ERASE H
2 GND
PIN701
1 AUDIO PB
2 GND
3 AUDIO REC
4 GND
5 AUDIO ERASE H
PIN703
1 D REC +5V
2 PB +5V
3 REG +12V
4 REG GND
TO C PRE AMP C.B PIN702 VIA CON702
PIN705
1 AUDIO IN
2 GND
3 AUDIO OUT
4 AUDIO MUTE
TO A MAIN C.B (Y/CHROMA SECTION) PIN403 VIA CON403
T701
Q701 2SC3940 REC BIAS OSC
R701 47
R702 6.8K
R703 4.7
C701 0.033 (M) (100V)
C702 220P
C703 47/16
C704 0.01
C705 0.01
R732 15K
L702 100µH
TP701
TP702
R725 100
R705 22K
C706 33/16
C707 100/25
C708 0.022
C709 3.3/50
C710 4.7/50
R706 10K
R707 1.2K
C711 0.01 (M)
L701 18mH
R708 3.9K
R709 10K
R710 22K
R711 10K
R712 5.6K
C712 2.2/50
R729 470
Q702 DTC144
Q702 MUTE SWITCH
R727 1K
C734 4700P
IC701 BA7767AS
IC701 VCR AUDIO SIGNAL REC/PB PROCESSOR
REC CTRL
EQ1
EQ2
REC
20dB
2K
120K
PB
LINE
35.5dB
MUTE
100K
BF
ALC
EE
C717 1800P
C718 4.7/25
C719 100P
C720 22/25
C721 0.01 (M)
C722 1/50
C723 4700P
C724 0.001
C725 47/6.3
C726 1/50
C727 0.1
C732 0.1
R714 33K
R715 180
R716 390K
R717 10K
R718 22K
R719 5.6K
R720 2.2K
R721 1M
R722 33K
R723 56K
R724 10K
R726 4.7K
R731 470K
(D-REC +5V)
(PB +5V)
(REG +12V)
(GND)
WAVE FORMS NO.
AUDIO (PB) SIGNAL
AUDIO (REC) SIGNAL

SCHEMATIC DIAGRAM – 8 (POWER UNIT – 2 SECTION)
※USE TO POWER UNIT – 2


PIN703
1 Ð REC +5V
2 PB +5V
3 REG +12V
4 REG GNÐ
TO C PRE AMP C.B PIN702 VIA CON702
PIN705
1 AUÐIO IN
2 GNÐ
3 AUÐIO OUT
4 AUÐIO MUTE
TO A MAIN C.B (Y/CHROMA SECTION) PIN403 VIA CON403
ːGNAL
ːSSOR
J101
AC~
Y POWER C.B-5
F101 630 MMA 250V
FL101 22MMH 0.4A
RED
GRY
W101
W102
RED
GRY
Z POWER C.B-6
T101
135℃ T.F
F102 2.0A 250V
AC20V
Ð101
Ð102
11EFS2X4
Ð103
Ð104
C101 3300/35
GNÐ
F103 2.0A 250V
AC8.5V
Ð105
Ð106
11EFS2X4
Ð107
Ð108
8.9
5.1
Q103 +5VREG Q103 2SÐ1406Y
C103 6800/16
C104 100/10
GNÐ
23.5
18.4
Q101 2SÐ1406Y
+18V REG.
R101 4.4K1/2W
Ð115 1SS133
R115 39K M/F
C102 470/25
GNÐ
23.5
12.3
Q102 2SÐ1406Y
+12VREG.
C116 0.1
R114 15K M/F
R110 56K M/F
C115 470/16
C114 33/16
R111 39K M/F
GNÐ
IC101 BA10324 VOLTAGE CONTROL
+B
GNÐ
5.1
23.5
R112 1.5K
R113 4.7K
R109 15K
R106 2700
C112 10/50
Ð116 HZ5C3
Q108 ÐTC114Y SWITCH
Q107 ÐTC114Y INVERTER
5.0
C113 470/10
GNÐ
8.9
5.1
+5VREG Q104 2SÐ1406Y
CON101
1 UNREG +18V
2 UNREG GNÐ
3 UNREG GNÐ
4 REG +12V
5 REG +5V
6 REG GNÐ
7 REG GNÐ
8 EVER +5V
9 P ON
TO B SERVO/SYSCON C.B PIN215
CON102
1 EVER +5V
2 REG GNÐ
3 REG GNÐ
4 REG GNÐ
5 REG +12V
6 REG +5V
7 UNREG +50V
8 N.C.
TO A MAIN C.B (TUNER/IF SECTION) PIN404
GNÐ
43.5
Q105 LIMITTER
Ð109 1SR139-200
R103 47-1/4W
Q105 2SA933S
43.0
32.0
-44.8
Ð112 1SS133
Ð113 1SS133
42.4
R107 33K
Q106 2SA1015Y
Q106 -22V REG.
Ð110 1SR139-200
R104 100-1/4W
-44.6
R108 4.7K
C110 100/35
-24.0
C105 100/63
C106 100/63
AC35V
Ð117 HZ24-2L
-24.5
C111 47/50
GNÐ
GNÐ
PIN101
1 EVER +5V
2 UNREG GNÐ
3 UNREG -22V
4 UNREG -22V
5 UNREG -19V
TO D TIMER C.B CON902
Ð111 1SR139-200
R105 2.2-1/4W
-19.0
C107 1000/10
AC4.1V

WIRING – 4 (TIMER SECTION)


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
A B C D E F G H I J K
To V POWER C.B-3 PIN101
CON902
BLU GRY GRY GRY GRY
To B SERVO/SYSCON C.B WS209
FL901
FL DISPLAY
To B SERVO/SYSCON C.B WS208
IC902
REMOTE SENSOR
IC901
CN902
CN901
BT903
D940
R917
TEST
C901
GND
L901
R920
R906
C907
D942
C903
C902
R911
RST
R903
R912
R916
X901
BLK
L902
C904
C905
D910
D911
D912
D913
D914
D915
D916
RV901
WHT
BLU
D901
D902
Q901
Q902
X902
C906
C909
NEXT
D927
D928
D917
D918
D923
D924
D925
R910
R909
R908
R907
D903
D904
D905
D906
D907
D908
D909
D919
D920
D922
D926
D929
D930
D931
D932
D933
D934
D937
D941
Q903
Q904
Q905
Q906
Q907
Q908
CN903
CN904
D TIMER C.B
E POWER SW C.B
POWER SW901
SW901
POWER
STANDBY/ON
SW908
RECORD
SW907
NOISE CANCEL PAUSE/STILL
RV901
TRACKING
SW903
STOP
SW906
F.FWD
SW919
UP
SW920
DOWN
CHANNEL
SW904
PLAY
SW916
NEXT
SW905
REW
SW915
CHECK/PRGM
SW910
TIMER REC
SW902
EJECT
SW909
QTR
SW917
CLEAR
SW912
MEMORY
SW913
RESET
COUNTER
SW914
CLOCK/COUNTER
SW918
TIME SET
SW929
BAND
SW923
CH-1
SW922
CH-10
SW924
TU+
SW925
TU−
SW921
SET
CHANNEL PRESET
SW931
TEST
SW926
INPUT SELECT
SW911

SCHEMAT

TO B
SERVO/SYSCO
C.B
WS209

TO B
SERVO/SYSCON
C.B
WS208

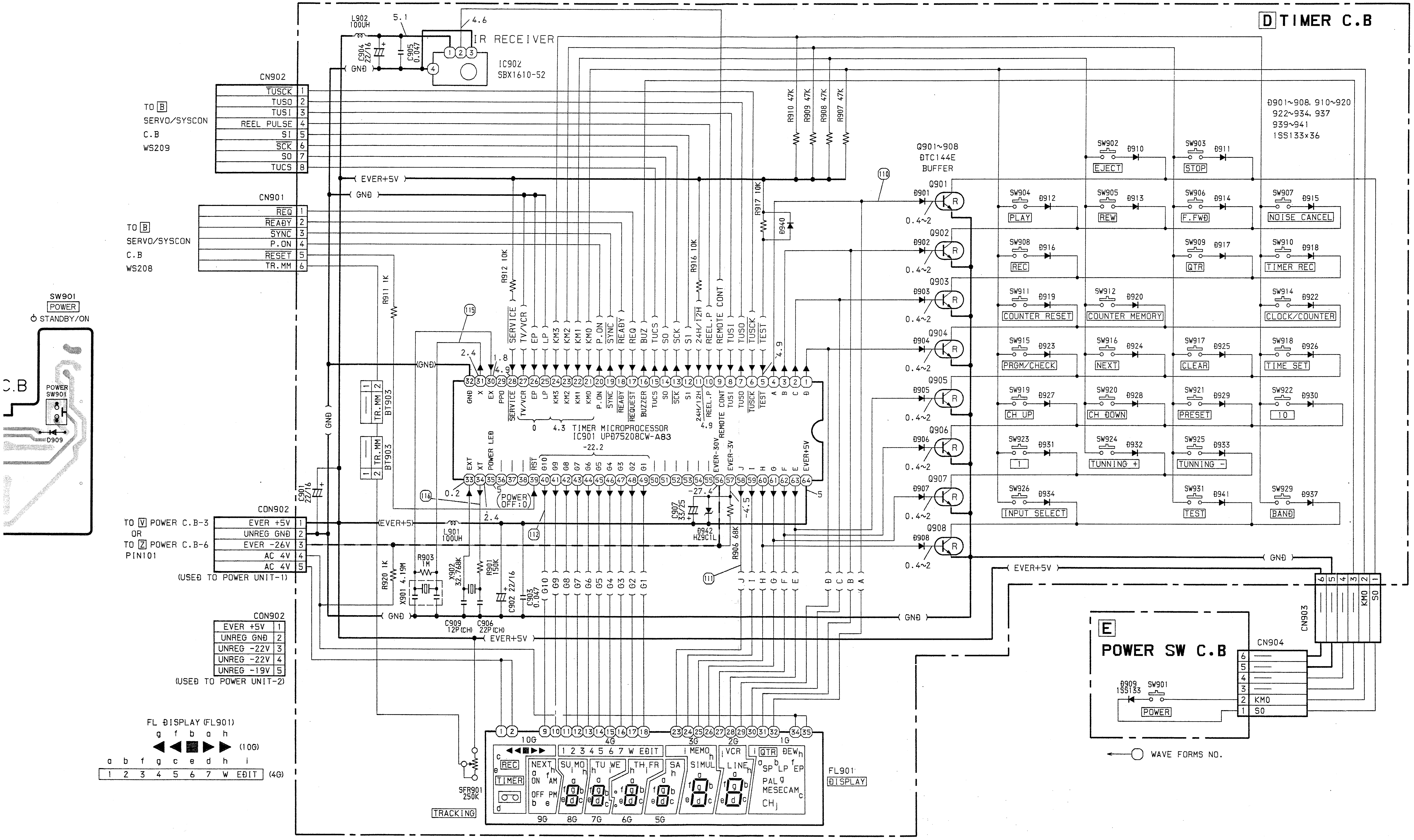
TO V POWER C.
OR
TO Z POWER C.B
PIN101

(USE

(USE

FL DISPLAY
g f b
a b f g c e
1 2 3 4 5 6

SCHEMATIC DIAGRAM – 9 (TIMER SECTION)


D TIMER C.B
IR RECEIVER
IC902
SBX1610-52
L902 100UH
C904 22/16
C905 0.047
CN902
TUSCK 1
TUSO 2
TUSI 3
REEL PULSE 4
SI 5
SCK 6
SO 7
TUCS 8
TO B SERVO/SYSCON C.B WS209
CN901
REQ 1
READY 2
SYNC 3
P.ON 4
RESET 5
TR.MM 6
TO B SERVO/SYSCON C.B WS208
EVER+5V
GND
R910 47K
R909 47K
R908 47K
R907 47K
R917 10K
D940
R912 10K
R916 10K
R911 1K
Q901~908
DTC144E
BUFFER
D901~908, 910~920
922~934, 937
939~941
1SS133x36
TIMER MICROPROCESSOR
IC901 UPD75208CW-A83
SERVICE
TV/VCR
EP
LP
KM3
KM2
KM1
KM0
P.ON
SYNC
READY
REQUEST
BUZZER
TUCS
SO
SCK
SI
24H/12H
REEL.P
REMOTE CONT
TUSI
TUSO
TUSCK
TEST
EXT
XT
POWER LED
RST
EVER-30V
EVER-3V
EVER+5V
(POWER OFF:0)
BT903
TR.MM
SW901
POWER
STANDBY/ON
D909
CON902
EVER +5V 1
UNREG GND 2
EVER -26V 3
AC 4V 4
AC 4V 5
TO V POWER C.B-3
OR
TO Z POWER C.B-6
PIN101
(USED TO POWER UNIT-1)
CON902
EVER +5V 1
UNREG GND 2
UNREG -22V 3
UNREG -22V 4
UNREG -19V 5
(USED TO POWER UNIT-2)
L901 100UH
C901 22/16
R903 1M
X901 4.19M
X902 32.768K
R901 150K
C902 22/16
C903 0.047
C909 12P(CH)
C906 22P(CH)
R920 1K
C907 33/25
D942 HZ9C1L
R906 68K
SW902 EJECT
SW903 STOP
SW904 PLAY
SW905 REW
SW906 F.FWD
SW907 NOISE CANCEL
SW908 REC
SW909 QTR
SW910 TIMER REC
SW911 COUNTER RESET
SW912 COUNTER MEMORY
SW914 CLOCK/COUNTER
SW915 PRGM/CHECK
SW916 NEXT
SW917 CLEAR
SW918 TIME SET
SW919 CH UP
SW920 CH DOWN
SW921 PRESET
SW922 10
SW923 1
SW924 TUNNING +
SW925 TUNNING -
SW926 INPUT SELECT
SW931 TEST
SW929 BAND
CN903
KM0
SO
E POWER SW C.B
CN904
D909 1SS133
SW901
POWER
FL DISPLAY (FL901)
FL901 DISPLAY
SFR901 250K
TRACKING
WAVE FORMS NO.

FL DISPLAY (FL901)

g	f	b	a	h			
a	b	f	g	c	e	d	h	i
1	2	3	4	5	6	7	W	EDIT

(10G) (4G)

IC DESCRIPTION

IC,MB88525 – 205M

<table>
<tr><th>Pin No.</th><th>Pin Name</th><th>I/O</th><th>Description</th><th>Active</th></tr>
<tr><td>1</td><td>TOP – SENSOR
(START)</td><td>I</td><td>Receives the tape top (start) detection signal and
A) Prevents the tape running in the reverse direction.
B) Shifts the unit to the stop mode if this signal is input when the tape is running in reverse.</td><td>H</td></tr>
<tr><td>2</td><td>END – SENSOR</td><td>I</td><td>Receives the tape end detection signal and
A) Prevents the tape running in the forward direction.
B) Shifts the unit to the stop mode if this signal is input when the tape is running in forward.</td><td>H</td></tr>
<tr><td>3</td><td>RF – SWP</td><td>I</td><td>Receives drum rotation pulses.
When pulses are not input for 2 seconds in a mode where the drum is rotating due to an abnormality in the tape or deck mechanism, the VCR enters the stop mode to protect the tape.</td><td>Pulse</td></tr>
<tr><td>4</td><td>REEL – SENSOR</td><td>I</td><td>Receives a signal from the reel sensor in the deck mechanism.
When pulses are not input for 2 seconds in a mode where the reel is rotating due to an abnormality in the tape or deck mechanism, the VCR enters the stop mode to protect the tape.</td><td>Pulse</td></tr>
<tr><td>5</td><td>$\overline{\text{CASSETTE – OUT}}$</td><td>I</td><td>The CASSETTE OUT switch in the cassette loading mechanism is connected to detect the cassette-out state (eject).
Instructs the cassette out operation (unloading) to stop.</td><td>L</td></tr>
<tr><td>6</td><td>$\overline{\text{CASSETTE –}}$
$\overline{\text{START}}$</td><td>I</td><td>The CASSETTE START switch in the cassette loading mechanism is connected to instruct the cassette-in operation (loading).
When the input is detected during the cassette-out operation, the capstan motor is pulse driven.</td><td>L</td></tr>
<tr><td>7</td><td>$\overline{\text{CASSETTE – IN}}$</td><td>I</td><td>The cassette-in switch in the cassette loading mechanism is connected to detect the cassette-in state.</td><td>L</td></tr>
<tr><td>8</td><td>——</td><td>–</td><td>Unused (pulled up).</td><td>–</td></tr>
<tr><td>9
10
11
12</td><td>$\overline{\text{MODE SW 1}}$
$\overline{\text{MODE SW 2}}$
$\overline{\text{MODE SW 3}}$
$\overline{\text{MODE SW 4}}$</td><td>I</td><td>These pins detect the position of the tape sledding mechanism.</td><td>H or L</td></tr>
<tr><td>13
14</td><td>LP • EP – H
EP – H</td><td>I</td><td>Tape speed detection inputs.
<table>
<tr><th></th><th>NTSC/PAL</th><th>LP • EP-H</th><th>EP-H</th></tr>
<tr><td>SP</td><td>2H/3H</td><td>L</td><td>L</td></tr>
<tr><td>LP</td><td>4H/3H</td><td>H</td><td>L</td></tr>
<tr><td>EP</td><td>6H/6H</td><td>H</td><td>H</td></tr>
</table></td><td>H</td></tr>
<tr><td>15
16</td><td>MESECAM/$\overline{\text{PAL}}$
NTSC/$\overline{\text{PAL}}$</td><td>I</td><td>Video system discrimination inputs.
<table>
<tr><th>NTSC/PAL</th><th>MESECAM/PAL</th><th>MODE</th></tr>
<tr><td>H</td><td>※</td><td>NTSC</td></tr>
<tr><td>L</td><td>H</td><td>MESECAM</td></tr>
<tr><td>L</td><td>L</td><td>PAL</td></tr>
</table>
※ : DON'T CARE</td><td>H or L</td></tr>
<tr><td>17</td><td>——</td><td>–</td><td>Unused (pulled up).</td><td>–</td></tr>
<tr><td>18</td><td>——</td><td>–</td><td>Unused (pulled up).</td><td>–</td></tr>
<tr><td>19</td><td>$\overline{\text{DEW – SENSOR}}$
(fixed at "H")</td><td>I</td><td>Receives a signal from the dew sensor circuit and prevents mechanical operation in the high humidity state.</td><td>L</td></tr>
<tr><td>20</td><td>$\overline{\text{REC – PROOF}}$</td><td>I</td><td>Detects the presence/absence of the mis-erasure prevention tab.
"H" : No tab
"L" : Tab</td><td>L</td></tr>
<tr><td>21</td><td>–</td><td>–</td><td>Unused.</td><td>–</td></tr>
<tr><td>22</td><td>VCR/$\overline{\text{TV}}$</td><td>O</td><td>Switches the RF signal output of the VCR.
"H" : Built-in RF converter signal output
"L" : External antenna signal output</td><td>H or L</td></tr>
<tr><td>23</td><td>LINE/$\overline{\text{TUNER}}$
(AUDIO)</td><td>O</td><td>Switches the audio output.
"H" : Line input audio
"L" : Tuner audio</td><td>H or L</td></tr>
<tr><td>24</td><td>LINE/$\overline{\text{TUNER}}$
(VIDEO)</td><td>O</td><td>Switches the video output.
"H" : Line input video
"L" : Tuner video</td><td>H or L</td></tr>
<tr><td>25
26</td><td>EX
X</td><td>I
O</td><td>A ceramic oscillator which generates the system clock signal (6MHz) is connected to these pins.</td><td></td></tr>
</table>

<table>
<tr><th>Pin No.</th><th>Pin Name</th><th>I/O</th><th>Description</th><th>Active</th></tr>
<tr><td>27</td><td>$\overline{\text{RST}}$</td><td>I</td><td>System reset input.</td><td>L</td></tr>
<tr><td>28</td><td>——</td><td>–</td><td>Unused.</td><td>–</td></tr>
<tr><td>29</td><td>——</td><td>–</td><td>Unused (pulled up).</td><td>–</td></tr>
<tr><td>30</td><td>$\overline{\text{SCK}}$</td><td>I</td><td>Receives a pulse to time writing/reading of the serial data to/ from the timer microprocessor.</td><td>Pulse</td></tr>
<tr><td>31</td><td>SI</td><td>I</td><td>Signal for receiving serial data from the timer microprocessor.</td><td>H or L</td></tr>
<tr><td>32</td><td>GND</td><td>–</td><td>GND.</td><td>–</td></tr>
<tr><td>33</td><td>SO</td><td>O</td><td>Signal to output serial data to the timer microprocessor.</td><td>H or L</td></tr>
<tr><td>34</td><td>$\overline{\text{DRUM – ON}}$</td><td>O</td><td>Drum motor rotation/stop control.</td><td>L</td></tr>
<tr><td>35</td><td>DELAYED – REC</td><td>O</td><td>Outputs "H"after the tape transport and the capstan speed are stabilized when the stop mode is switched to the record mode and the record pause mode is switched to the record mode, to instruct recording of a signal on the tape.</td><td>H</td></tr>
<tr><td>36</td><td>——</td><td>–</td><td>Unused.</td><td>–</td></tr>
<tr><td>37</td><td>A – MUTE</td><td>O</td><td>Mutes an audio signal.
A) Outputs "H" during trick play.
B) Outputs "H" for the specified period before and after the EE output is inverted to cut off the noise occurring when switching between the tape recording signal and EE signal (when the EE output is inverted).</td><td>H</td></tr>
<tr><td>38
39</td><td>CM – R
CM – F</td><td>O</td><td>Capstan motor rotation/stop and rotation direction control outputs.
<table>
<tr><th>CM-F</th><th>CM-R</th><th>State</th></tr>
<tr><td>L</td><td>L</td><td>Moter stopped</td></tr>
<tr><td>H</td><td>L</td><td>Rotates forward</td></tr>
<tr><td>L</td><td>H</td><td>Rotates in reverse</td></tr>
<tr><td>H</td><td>H</td><td>Braking stopped</td></tr>
</table></td><td>H or L</td></tr>
<tr><td>40
41</td><td>TLM – R
TLM – F</td><td>O</td><td>Tape sledding motor rotation/stop and rotation direction control outputs.
<table>
<tr><th>TLM-F</th><th>TLM-R</th><th>State</th></tr>
<tr><td>L</td><td>L</td><td>Moter stopped</td></tr>
<tr><td>H</td><td>L</td><td>Rotates forward</td></tr>
<tr><td>L</td><td>H</td><td>Rotates in reverse</td></tr>
<tr><td>H</td><td>H</td><td>Braking stopped</td></tr>
</table></td><td>H or L</td></tr>
<tr><td>42</td><td>CAPSTAN – SPEED • HOLD</td><td>O</td><td>Outputs "H" when the tape sledding motor moves among the REVERSE, PLAY and PINCH OFF positions accompanying the transition between PLAY and REVIEW from REC to REC PAUSE.
Outputs "H" during STILL and PAUSE to hold the capstan speed so the capstan servo circuit can easily be returned to the play speed.</td><td>H</td></tr>
<tr><td>43</td><td>FF/REW</td><td>O</td><td>Outputs "H" during FF/REW, cassette-in and out operations and during unloading from PLAY to STOP.
Controls the high-speed rotation of the capstan motor.</td><td>H</td></tr>
<tr><td>44</td><td>REV</td><td>O</td><td>Unused. Outputs "H" during REVIEW.
Controls the review speed of the servo circuit.</td><td>H</td></tr>
<tr><td>45</td><td>CUE</td><td>O</td><td>Unused. Outputs "H" during CUE.
Controls the cue speed of the servo circuit.</td><td>H</td></tr>
<tr><td>46</td><td>STILL – ADVANCE</td><td>O</td><td>Unused. Outputs "H" during STILL ADVANCE.</td><td>H</td></tr>
<tr><td>47</td><td>STILL /PAUSE</td><td>O</td><td>Unused. Outputs "H" during STILL, REC PAUSE and S-ADV.</td><td>H</td></tr>
<tr><td>48</td><td>PLAY</td><td>O</td><td>Unused. Outputs "H" during PLAY, STILL, CUE, REV and S-ADV.</td><td>H</td></tr>
<tr><td>49</td><td>REC</td><td>O</td><td>Unused. Outputs "H" during REC and REC PAUSE.</td><td>H</td></tr>
<tr><td>50</td><td>REW</td><td>O</td><td>Unused. Outputs "H" during REW and REV.</td><td>H</td></tr>
<tr><td>51</td><td>FF</td><td>O</td><td>Unused. Outputs "H" during FF and CUE.</td><td>H</td></tr>
<tr><td>52</td><td>——</td><td>–</td><td>Unused.</td><td>–</td></tr>
<tr><td>53</td><td>DELAYED – PLAY</td><td>O</td><td>Outputs "H" after the tape transport and capstan speed are stabilized when STOP is switched to PLAY and STOP is switched to STILL, to prevent picture distortion.</td><td>H</td></tr>
<tr><td>54</td><td>$\overline{\text{REQUEST}}$</td><td>O</td><td>Signal to request serial communications to the timer microprocessor.</td><td>L</td></tr>
<tr><td>55</td><td>$\overline{\text{READY}}$</td><td>O</td><td>Signal to inform the timer microprocessor that the standby for serial data reception is completed.</td><td>L</td></tr>
<tr><td>56</td><td>S • CLK</td><td>O</td><td>Outputs a pulse to time the writing of serial data to the servo IC.</td><td>Pulse</td></tr>
<tr><td>57</td><td>S • DAT</td><td>O</td><td>Signal to output serial data to the servo IC.</td><td>H or L</td></tr>
</table>

Pin No.	Pin Name	I/O	Description	Active
58	EE	O	Switches the video output between the external input signal and tape playback signal. "H" : External input signal "L" : Tape playback signal	H
59	———	–	Unused.	–
60	TRKG RST	O	Outputs a pulse of approx. 5ms when the POWER, EJECT or REC key is pressed to reset the tracking microprocessor.	H
61	JOG	O	Outputs "H" during CUE and REV.	H
62	$\overline{\text{SYNC}}$	I	Signal to synchronize serial communications with the timer microprocessor.	L
63	———	–	Unused.	–
64	EVER +5V	–	Positive power supply pin.	–

IC,UPC75208CW – A83

Pin No.	Pin Name	I/O	Description	Active
1 2 3 4	D C B A	O	Anode and key matrix signals for the fluorescent display tube.	Pulse
5	$\overline{\text{TEST}}$	I	Input for the test mode of the unit.	L
6	$\overline{\text{TUSCK}}$	I	Receives a pulse to time the writing/reading of serial data to/from the tuner microprocessor.	Pulse
7	TUSO	O	Signal to output serial data to the tuner microprocessor.	H or L
8	TUSI	I	Signal for receiving serial data from the tuner microprocessor.	H or L
9	$\overline{\text{REMOCON}}$	I	Remote control data input.	Pulse
10	REEL-PULSE	I	Receives a signal from the reel sensor in the deck mechanism. Receives reel pulses for the tape counter. When 4 pulses are input, the counter counts up by one step.	Pulse
11	24h/$\overline{\text{12h}}$	I	Switches the clock indication. "H" : 24 hours "L" : 12 hours AM/PM	H or L
12	SI	I	Signal to receive serial data from the mechanism microprocessor.	H or L
13	$\overline{\text{SCK}}$	O	Receives a pulse to time the writing/reading of serial data to/from the mechanism microprocessor.	Pulse
14	SO	O	Signal to output serial data to the mechanism microprocessor.	H or L
15	TUCS	O	Outputs a signal to request serial communications to the tuner microprocessor.	H
16	BUZZER	O	Outputs signal (approx. 2kHz) to drive the buzzer.	Pulse
17	$\overline{\text{REQUEST}}$	I	Receives a signal to request serial communications from the mechanism microprocessor.	L
18	$\overline{\text{READY}}$	I	Receives a signal from the mechanism microprocessor which signals that the standby for serial data reception is completed.	L
19	$\overline{\text{SYNC}}$	O	Signal to synchronize serial communications with the mechanism microprocessor.	L
20	P. ON	O	Controls the power supply circuit of the VCR. Power is turned on.	H
21 22 23 24	KM 0 KM 1 KM 2 KM 3	I	Key matrix scan input.	Pulse
25	LP	I	Tape speed mode. Tape speed is LP.	H
26	EP	I	Tape speed mode. Tape speed is EP.	H
27	TV/VCR	I	Selects the indication in the fluorescent display of the VCR. "H" : Displays information. "L" : Does not display information.	H
28	$\overline{\text{SERVICE}}$	I	Input for the service mode of the VCR.	L
29	PPO	–	Unused.	–
30	EX	I	A ceramic oscillator which generates a main system clock pulse (4.19MHz) is connected.	
31	X	O		

Pin No.	Pin Name	I/O	Description	Active
32	GND	–	GND.	–
33	EXT	I	A crystal oscillator which generates a sub-system clock pulse (32.768kHz) is connected.	
34	XT	O		
35	POWER LED	O	Outputs "H" when power is turned on.	H
36	——	–	Unused.	–
37				
38				
39	$\overline{RST}$	I	System reset input.	L
40	G10	O	Grid signals of the fluorescent display tube.	Pulse
41	G9			
42	G8			
43	G7			
44	G6			
45	G5			
46	G4			
47	G3			
48	G2			
49	G1			
50	——	–	Unused.	–
51				
52				
53				
54				
55				
56	EVER –30V	I	The pull-down resistors of the FIP controller/driver are connected.	
57	EVER –3V	I	Supplies power to the output buffer of the FIP controller/driver.	
58	J	O	Anode signals of the fluorescent display tube.	Pulse
59	I			
60	H	O	Anode and key matrix signals for the fluorescent display tube.	Pulse
61	G			
62	F			
63	E			
64	EVER +5V	–	Positive power supply.	–

IC,MN67481P

<table>
<tr><th>Pin No.</th><th>Pin Name</th><th>I/O</th><th>Description</th></tr>
<tr><td>1</td><td>VDD</td><td>–</td><td>Power supply (+5V) of digital section.</td></tr>
<tr><td>2</td><td>TR MM</td><td>I</td><td>Tracking monostable multivibrator.
Delay time constant for CTL locking position adjustment.</td></tr>
<tr><td>3</td><td>SDAT</td><td>I</td><td>Servo mode setting data input.</td></tr>
<tr><td>4</td><td>SCLK</td><td>I</td><td>Servo mode setting clock input.</td></tr>
<tr><td>5</td><td>RCLK</td><td>I</td><td>Reference timing clock for servo control (PAL : 4.433618MHz).</td></tr>
<tr><td>6</td><td>TEST</td><td>I</td><td>Unused (fixed at "L").</td></tr>
<tr><td>7</td><td>VLP</td><td>O</td><td>Artificial VD output (only during CUE, REV and STILL).</td></tr>
<tr><td>8
9</td><td>MOD 0
MOD 1</td><td>O</td><td>Record mode output.
<table>
<tr><th></th><th>MODE 0</th><th>MODE 1</th></tr>
<tr><td>SP mode 3H</td><td>"L"</td><td>"L"</td></tr>
<tr><td>LP mode 3H</td><td>"H"</td><td>"L"</td></tr>
<tr><td>EP mode 6H</td><td>"H"</td><td>"H"</td></tr>
</table></td></tr>
<tr><td>10</td><td>RF SW P</td><td>O</td><td>RF SW P output (PAL : 25Hz).</td></tr>
<tr><td>11</td><td>PWM 2</td><td>O</td><td>Drum servo phase error output.</td></tr>
<tr><td>12</td><td>PWM 1</td><td>O</td><td>Drum servo speed error output.</td></tr>
<tr><td>13</td><td>PWM 3</td><td>O</td><td>Capstan servo speed error output.</td></tr>
<tr><td>14</td><td>PWM 4</td><td>O</td><td>Capstan servo phase error output.</td></tr>
<tr><td>15</td><td>VSS</td><td>–</td><td>Power supply (GND) of digital section.</td></tr>
<tr><td>16</td><td>YPG</td><td>I</td><td>Drum PG amplifier input.</td></tr>
<tr><td>17</td><td>YFG</td><td>I</td><td>Drum FG amplifier input.</td></tr>
<tr><td>18</td><td>FGI</td><td>I</td><td>Capstan FG amplifier input.</td></tr>
<tr><td>19</td><td>RI</td><td>I</td><td>Sets the reference neutral point voltage (+2.5V) of the internal linear amplifier.</td></tr>
<tr><td>20</td><td>VRO</td><td>O</td><td>Reference voltage (set by pin 19) output.</td></tr>
<tr><td>21</td><td>CI</td><td>I</td><td>CTL clamp input.</td></tr>
<tr><td>22</td><td>CO</td><td>O</td><td>CTL amplifier output.</td></tr>
<tr><td>23</td><td>CTLG</td><td>–</td><td>CTL amplifier GND.</td></tr>
<tr><td>24</td><td>CTLA</td><td>I</td><td>Sets the CTL amplifier gain (negative input terminal).</td></tr>
<tr><td>25</td><td>CTLH</td><td>I</td><td>CTL input.</td></tr>
<tr><td>26</td><td>A VDD</td><td>–</td><td>Power supply (+5V) of analog section.</td></tr>
<tr><td>27</td><td>V SYN</td><td>I</td><td>Vertical sync signal input.</td></tr>
<tr><td>28</td><td>PG MM</td><td>I</td><td>Switching position monostable multivibrator.
Delay time constant for head switching point adjustment.</td></tr>
</table>

IC,UPD1730CT

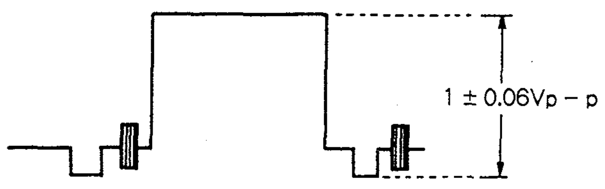
Pin No.	Pin Name	I/O	Description
1	OSC 1	I	4.5MHz ceramic oscillator input.
2	OSC 2	O	4.5MHz ceramic oscillator output.
3	PPO	O	D/A converter PWM output (tuning voltage).
4	CSYNC	I	H. sync pulse input (sync detection input).
5	AFT	I	AFT voltage input.
6	VDD	–	+5V power supply.
7	———	–	Unused.
8	AUS	I	Signal to select the destination, Australia.
9	CS	O	E^2 PROM chip select.
10	EUSI	I	E^2 PROM serial data input.
11	EUSO	O	E^2 PROM serial data output.
12	TUSO	O	Serial data output (input to the tuner).
13	TUCS	I	Data transfer trigger.
14	GND	O	GND.
15	POWER ON	I	POWER key signal.
16	———	–	Unused.
17	$\overline{\text{AFTC}}$	O	AFT control.
18	AFTC	O	AFT control.
19	TUMU	O	Goes "H"when muting a signal.
20	TUMTC	O	Goes "L"when H. sync pulse is detected.
21	———	–	Unused.
22	———	–	Unused.
23	GND	–	GND.
24	$\overline{\text{RESET}}$	I	Goes "H"at the program start.
25	TUSI	I	Serial data input (output from the tuner).
26	$\overline{\text{TUSCK}}$	O	Serial data clock.
27	$\overline{\text{ROMCLK}}$	O	E^2 PROM clock.
28 29	BAND 1 BAND 2	O	These pins assign the tuner band.
30	———	–	Unused.

BAND	BAND 1	BAND 2
VH	1	0
VL	0	1
U	1	1

ELECTRICAL ADJUSTMENT

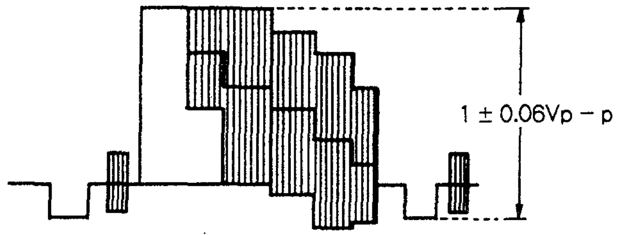
Preparation for adjustment

Input signal (100% white)



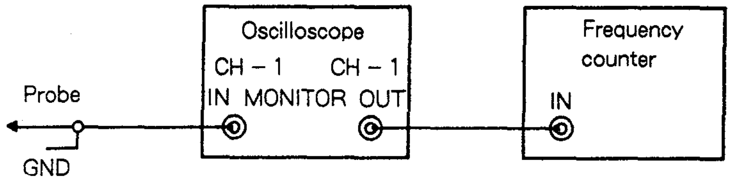
※Note : Voltage measured with a signal generator connected to the VCR

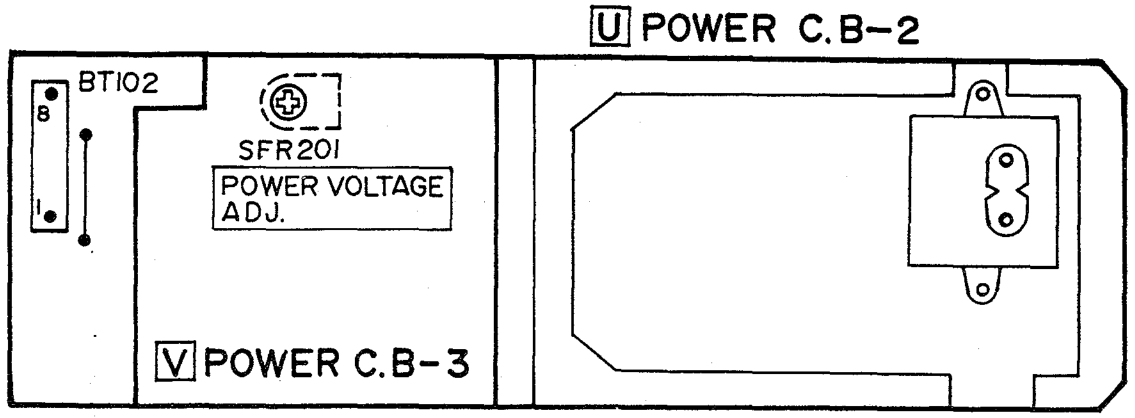
Input signal (color bar)



※Note : Voltage measured with a signal generator connected to the VCR

Connections of test equipment


Oscilloscope
CH − 1
CH − 1
IN MONITOR OUT
Frequency counter
IN
Probe
GND


U POWER C.B−2
BT102
8
1
SFR201
POWER VOLTAGE ADJ.
V POWER C.B−3

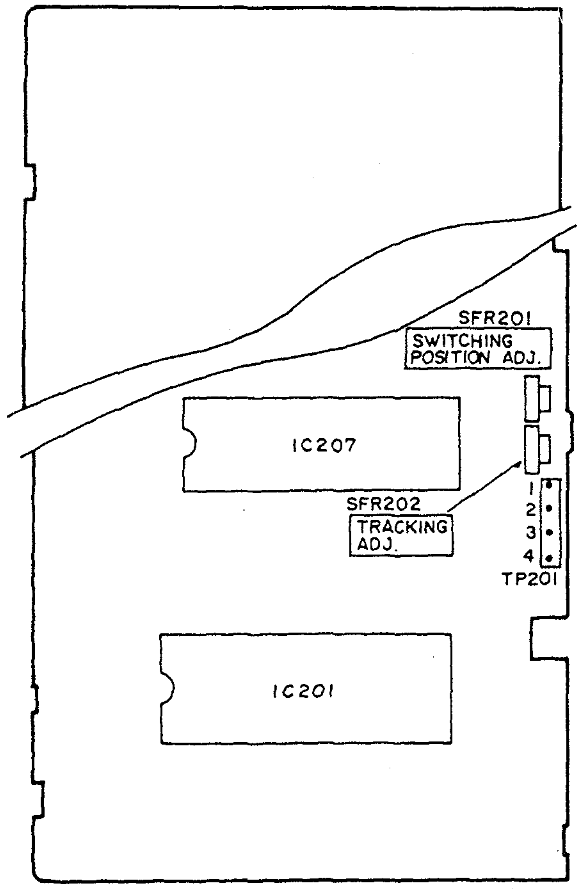
1. Power voltage adjustment

(U POWER C.B − 2)

1) Connect a digital tester between pin ⑤ (TP1) of BT102 on the main circuit board and ground.

2) Adjust SFR201 on the POWER C.B − 2 so that the voltage is 12.2V ± 0.1V.

B SERVO/SYSCON C.B
(COMPONENT SIDE)


SFR201
SWITCHING POSITION ADJ.
IC207
SFR202
TRACKING ADJ.
1
2
3
4
TP201
IC201

2. Servo circuit adjustment

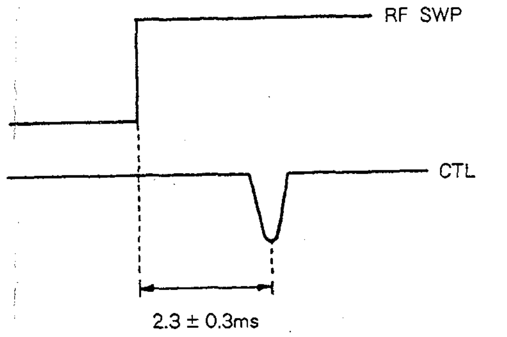
(1) Tracking Adjustment (B SERVO/SYSCON C.B)

Oscilloscope CH − 1 : TP201 pin ② (RF SWP)
CH − 2 : TP201 pin ① (CTL)

1) Set RV901 (tracking VR) to the center position.

2) Play alignment tape TTV − P1.

3) Adjust SFR202 so that the position of the CTL signal is as shown in the figure below.



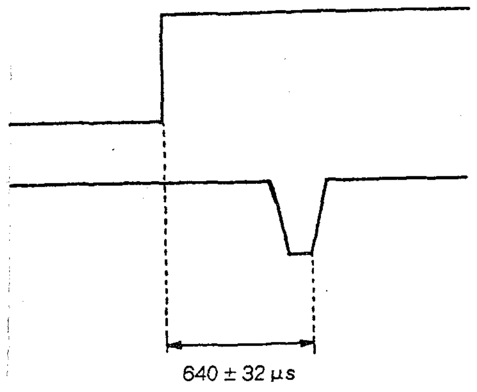
(2) Switching Position Adjustment (B SERVO/SYSCON C.B)

Oscilloscope CH − 1 : TP201 pin ② (RF SWP)
CH − 2 : TP201 pin ④ (V SYNC)

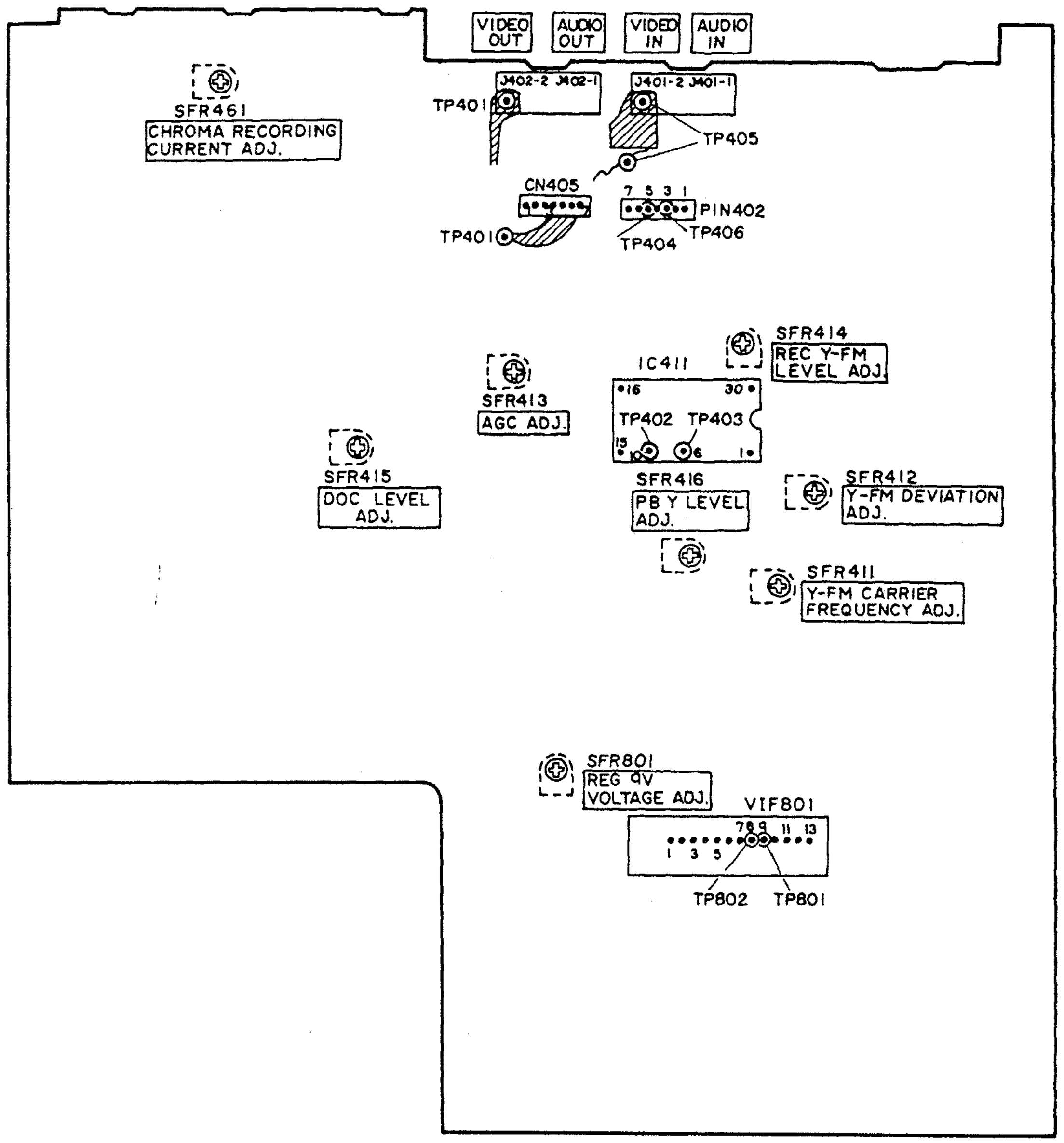
1) Set RV901 (tracking VR) to the center position.

2) Play alignment tape TTV − P1.

3) Adjust SFR201 so that the V. SYNC signal is as shown in the figure below.



A MAIN C.B (PATTERN SIDE)


VIDEO OUT
AUDIO OUT
VIDEO IN
AUDIO IN
J402-2 J402-1
J401-2 J401-1
TP401
TP405
SFR461
CHROMA RECORDING CURRENT ADJ.
CN405
7 5 3 1
PIN402
TP401
TP404
TP406
SFR414
REC Y-FM LEVEL ADJ.
IC411
16
30
TP402 TP403
15
10
6
1
SFR413
AGC ADJ.
SFR415
DOC LEVEL ADJ.
SFR416
PB Y LEVEL ADJ.
SFR412
Y-FM DEVIATION ADJ.
SFR411
Y-FM CARRIER FREQUENCY ADJ.
SFR801
REG 9V VOLTAGE ADJ.
VIF801
7 8 9 11 13
1 3 5
TP802 TP801

3. Tuner section adjustment

(1) REG 9V Voltage Adjustment (A MAIN C.B)

Digital voltmeter Positive terminal : VIF801 pin ⑨ (TP801)

Negative terminal : VIF801 pin ⑧ (TP802)

Adjust SFR801 so that the voltage is within the specification, 9.00 ± 0.05V.

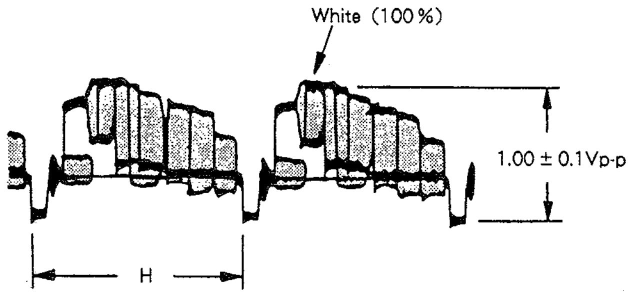
4. Video circuit adjustment

(1) PB Y・FM Level Adjustment (A MAIN C. B)

Oscilloscope : VIDEO OUT (TP401)

1) Play alignment tape TTV－P1.
2) Adjust SFR416 so that the white 100% level is as shown in the figure below.

※Terminate the VIDEO OUT jack with 75 ohms or connect a monitor to it.


White (100%)
1.00 ± 0.1Vp-p
H

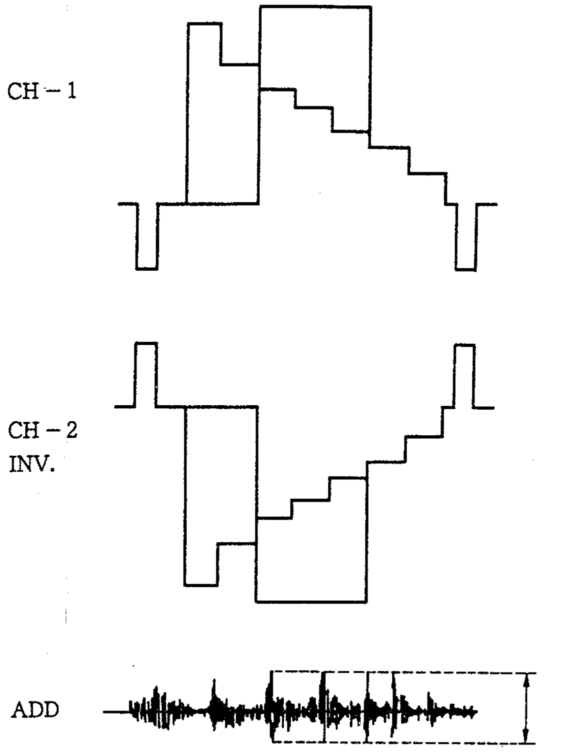
(2) DOC Level Adjustment (A MAIN C. B)

Oscilloscope CH－1 : IC411 Pin ⑩ (TP402)

CH－2 : IC411 Pin ⑨

1) Play back the test tape TTV－P1.
2) Turn the oscilloscope CH－2 INV switch on.
3) Turn the oscilloscope VERT MODE ADD switch on.
4) Adjust SFR415 so that the waveform becomes minimum as shown in the figure.

※ Leave the oscilloscope power range the same as that of the CH－1 and CH－2 range.

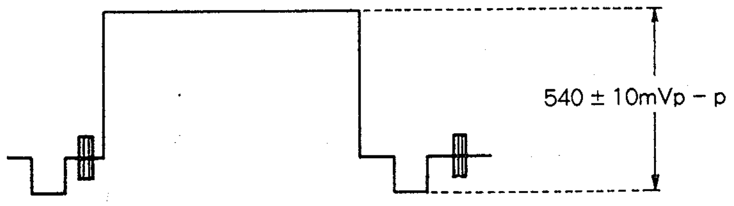

CH－1
CH－2
INV.
ADD

Adjust so that this become minimum

(3) AGC Adjustment (A MAIN C.B)

Oscilloscope : IC411 pin ⑥ (TP403)

1) Switch the input selector to LINE.
2) Apply a 100% white signal to the VIDEO IN jack.
3) Adjust SFR413 so that the Y signal is as shown in the figure below in the E－E mode.



(4) Y－FM Carrier Frequency Adjustment (A MAIN C.B)

Oscilloscope : PIN402 pin ⑤ (TP404)

1) Switch the input selector to LINE.
2) Set the VCR to the no signal input state (with no input connected to the VIDEO IN jack).
3) Set the VCR to the E－E mode.
4) Adjust SFR411 so that the frequency counter reads 3.8MHz ± 0.05MHz.

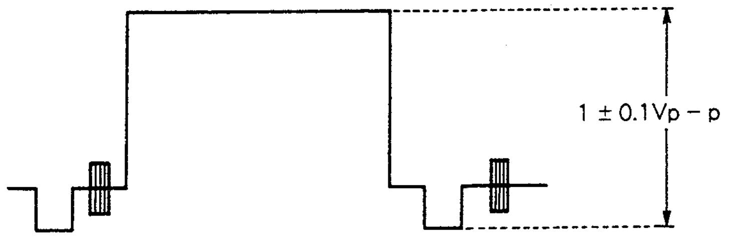
(5) Y－FM Deviation Adjustment (A MAIN C.B)

※The Y FM carrier frequency adjustment should have been completed.

Oscilloscope : VIDEO OUT (TP401)

1) Switch the input selector to LINE.
2) Record a 100% white signal.
3) Play the recorded section and check the Y signal level.
4) If out of specification adjust SFR412.
5) Repeat 2) ～4) until observe the waveform as indicated below.

※Terminate the VIDEO OUT jack with 75 ohms or connect a monitor to it.

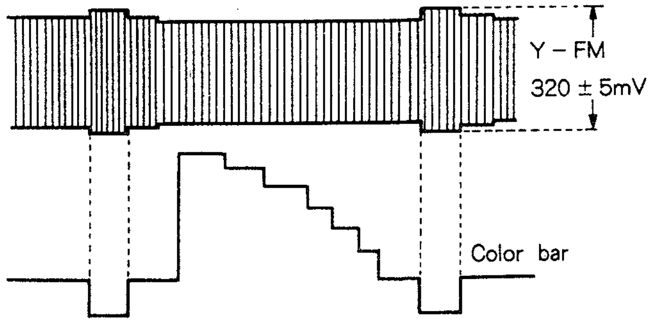


(6) REC Y－FM Level Adjustment (A MAIN C.B)

Oscilloscope CH－1 : PIN402 pin⑤ (TP404)

CH－2 : VIDEO IN (TP405)

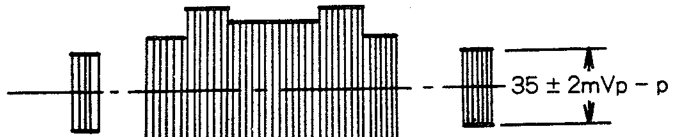
1) Switch the input selector to LINE.
2) Apply a color bar signal or 100% white signal to the VIDEO IN jack.
3) Adjust SFR414 so that the synchro signal level of the Y FM level is as shown in the figure below in the E－E mode.


Y－FM
320 ± 5mV
Color bar

(7) Chroma Recording Current Adjustment (A MAIN C.B)

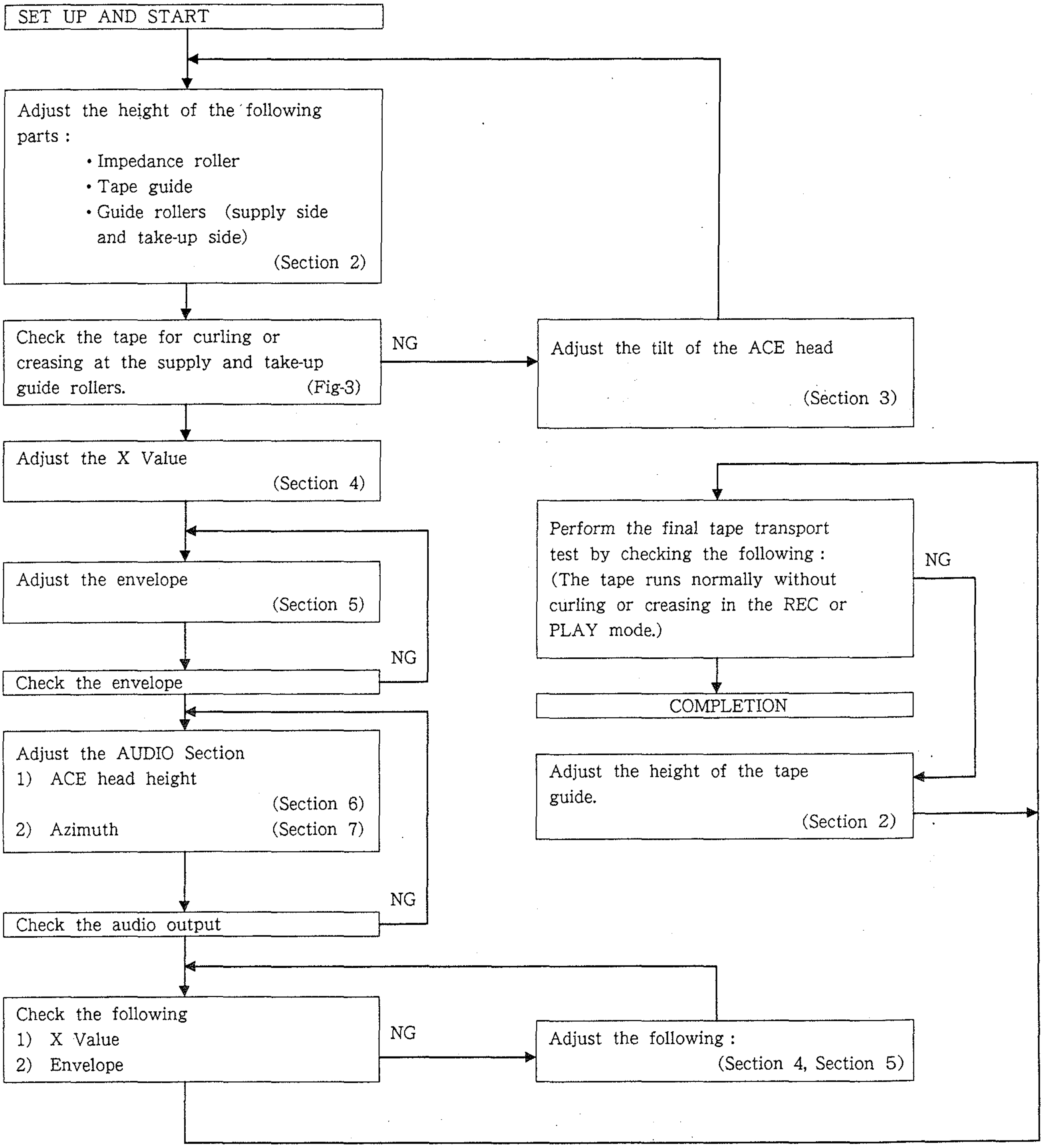
Oscilloscope : PIN402 pin ③ (TP406)

1) Switch the input selector to LINE.
2) Apply a color bar signal to the VIDEO IN jack.
3) Set the VCR the record mode and adjust SFR461 so that the burst level is as shown in the figure below.



5. MECHANICAL ADJUSTMENT

1.TAPE TRANSPORT ADJUSTMENT FLOWCHART


SET UP AND START
Adjust the height of the following parts :
• Impedance roller
• Tape guide
• Guide rollers (supply side and take-up side)
(Section 2)
Check the tape for curling or creasing at the supply and take-up guide rollers. (Fig-3)
NG
Adjust the tilt of the ACE head
(Section 3)
Adjust the X Value
(Section 4)
Adjust the envelope
(Section 5)
Check the envelope
NG
Adjust the AUDIO Section
1) ACE head height
(Section 6)
2) Azimuth (Section 7)
Check the audio output
NG
Check the following
1) X Value
2) Envelope
NG
Adjust the following :
(Section 4, Section 5)
Perform the final tape transport test by checking the following : (The tape runs normally without curling or creasing in the REC or PLAY mode.)
NG
COMPLETION
Adjust the height of the tape guide.
(Section 2)

2.TAPE RUNNING POSITION ADJUSTMENT
(GUIDE ROLLER/TAPE GUIDE/IMPEDANCE ROLLER)

Set – up

Lift the "Main circuit board".

1. Perform the height adjustment for the following items to obtain the proper tape running position. (See Figure – 1)
   ① Impedance roller
   ② Guide roller (Supply side)
   ③ Guide roller (Take – up side)
   ④ Tape guide

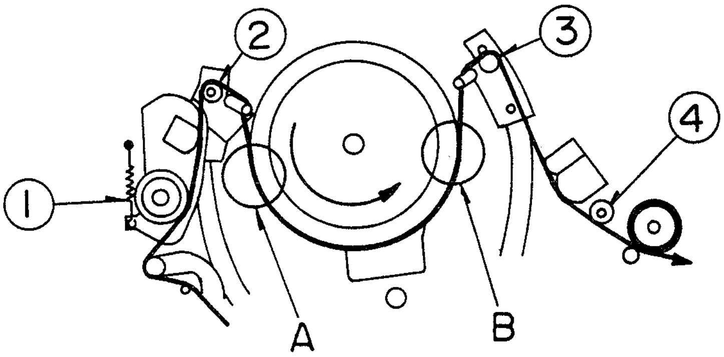


Fig. – 1

2. Load a blank tape and set it to the PLAY mode. Check the tape transport at points "A" and "B" as shown in Figure – 1.

3. Operate it between the PLAY and STOP modes several times.

4. Observe the tape transport at the "Lead surface of the cylinder" during the PLAY mode, and confirm that the tape runs smoothly along the "Lead surface of the cylinder" without slipping downward or upward. (See Figure – 2)

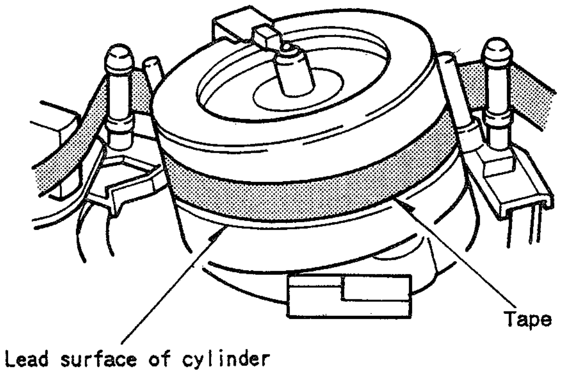


Fig. – 2

5. During loading, play and unloading, observe the tape at the supply and take-up "Guide rollers", "Tape guide" and "Impedance roller". Confirm that there is no curling or creasing etc., as shown in Figure-3.

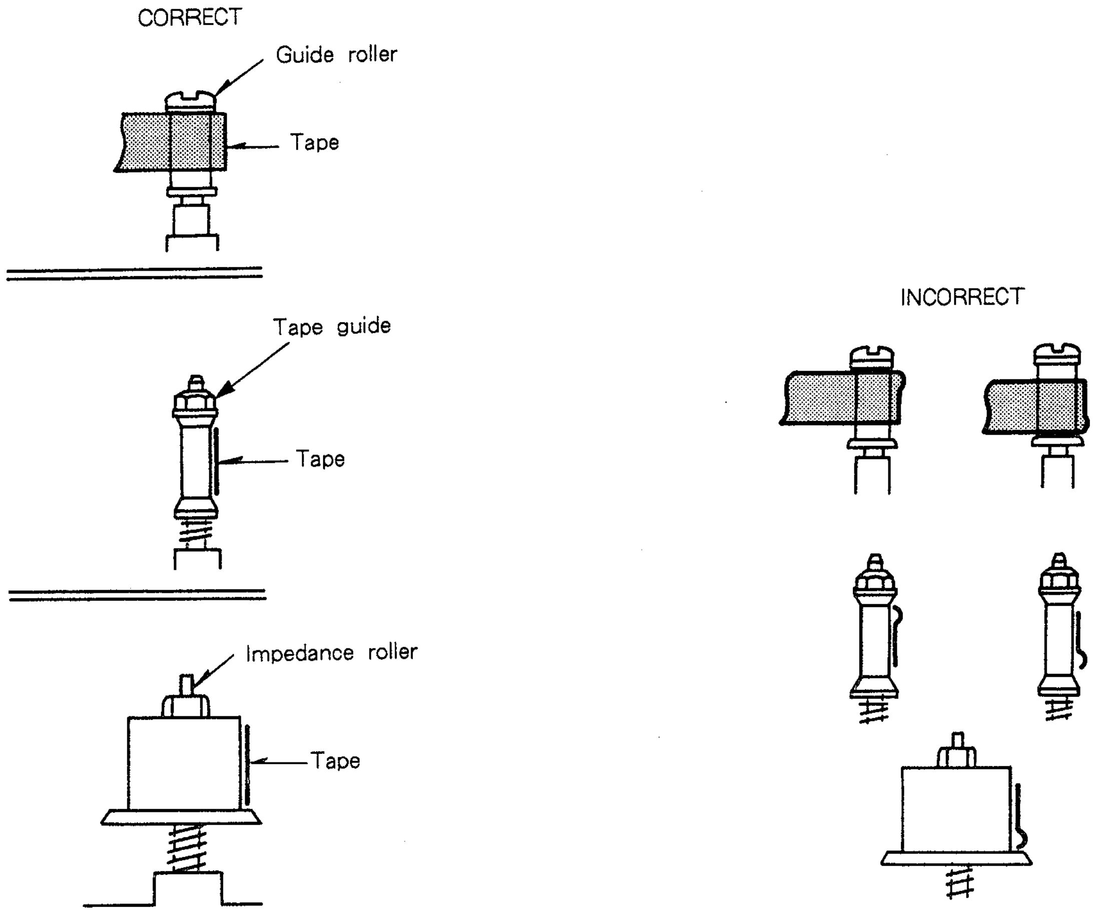

CORRECT
Guide roller
Tape
Tape guide
Tape
Impedance roller
Tape
INCORRECT

Fig.-3

6. If any curling or creasing is noted, adjust "Tape guide roller" and "Impedance roller" first. In this case, adjust the "Impedance roller" in both PLAY and REV modes so that the tape runs as shown in Figure-4.

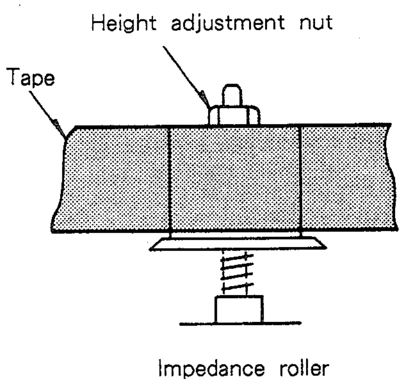

Height adjustment nut
Tape
Impedance roller

Fig.-4

7. Next, adjust the "Guide roller" height. Insert the adjustment driver (J2) into the "Guide roller" top. (See Figure – 5)
   Adjust the height by turning the driver slightly so that the tape runs on the "Guide roller" as shown in Figure – 3, and the lower edge of the tape runs along the "Lead surface of the cylinder".

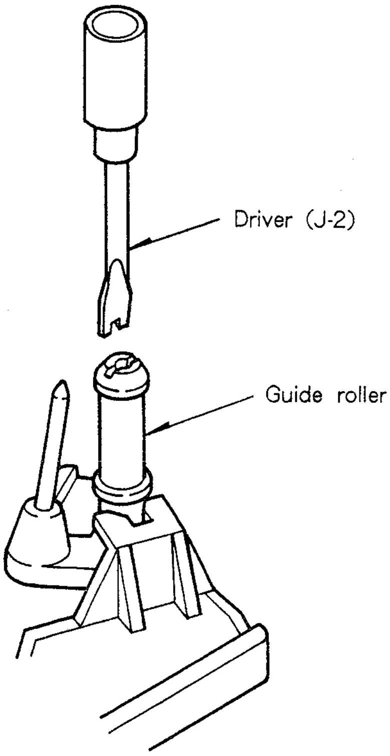


Fig. – 5

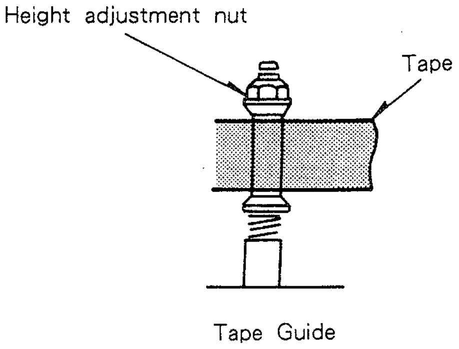


Fig. – 6

8. After completion of the supply side "Guide roller" adjustments, adjust "Tape guide" so that tape runs as shown in Figure – 6 and adjust the take – up side "Guide roller" by using the same procedures as for the supply side adjustments.
   In this case, adjust the "Guide roller" height first.

9. Confirm that there is no curling or creasing at the "Impedance roller" (Both PLAY and REV modes). If there is any curling or creasing at the "Impedance roller", adjust the same procedures of Figure – 6.

10. Finally, confirm that there is no curling or creasing at the take – up side guide roller and tape guide. If there is any curling or creasing between the take – up side "Guide roller" and the "ACE head", adjust the "ACE head".

3.AUDIO CONTROL HEAD ADJUSTMENT

1. Load a recorded tape and set the it to PLAY mode.

2. Adjust the height of the edge of the "Audio track" on the "Audio control head" by using the height adjustment nut Ⓐ and the "Tilt adjustment screw" Ⓒ so that the tape transport is smooth at the "Take – up guide pole". Align the "Audio control head" height. (See Figure – 7)

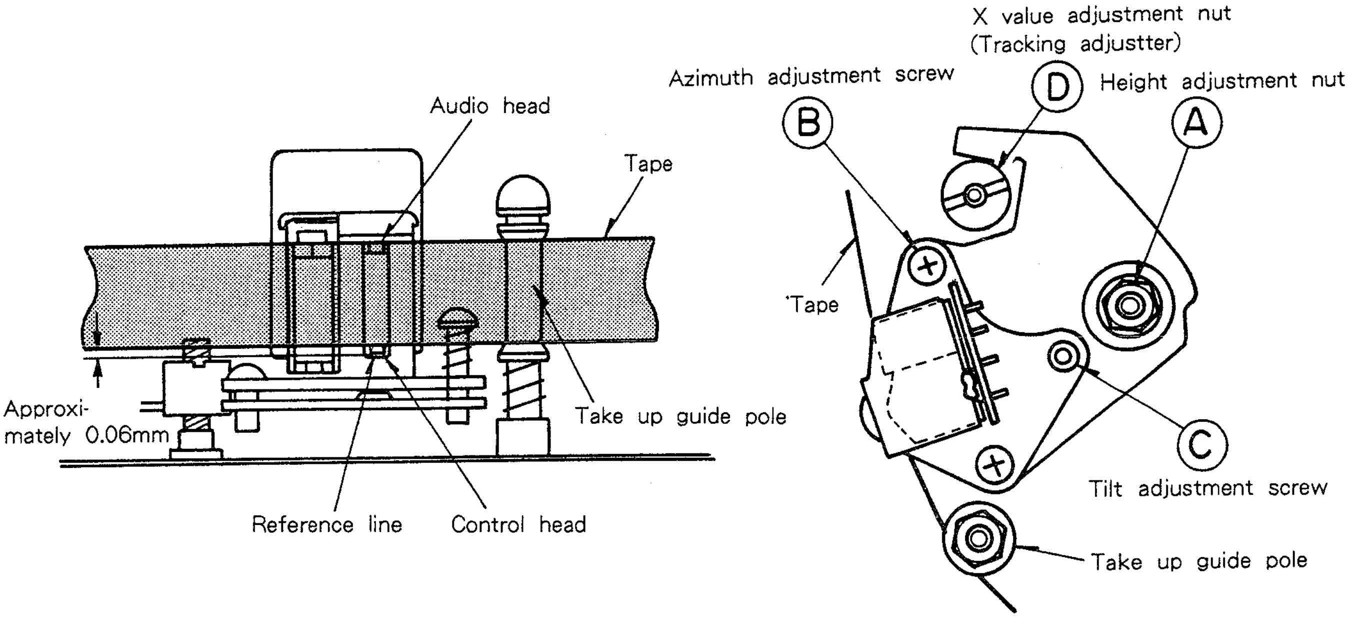

X value adjustment nut
(Tracking adjustter)
Azimuth adjustment screw
Audio head
D
Height adjustment nut
B
A
Tape
Tape
Approxi-
mately 0.06mm
Take up guide pole
C
Tilt adjustment screw
Reference line
Control head
Take up guide pole

Fig. – 7

3. The fine adjustment is not required at this time.
   The following conditions as sufficient :
   (a) Proper tape transport between the "Audio control head" and the "Take – up guide pole".
   (b) Stable SERVO system operation (proper pickup of tape's recorded control signal).

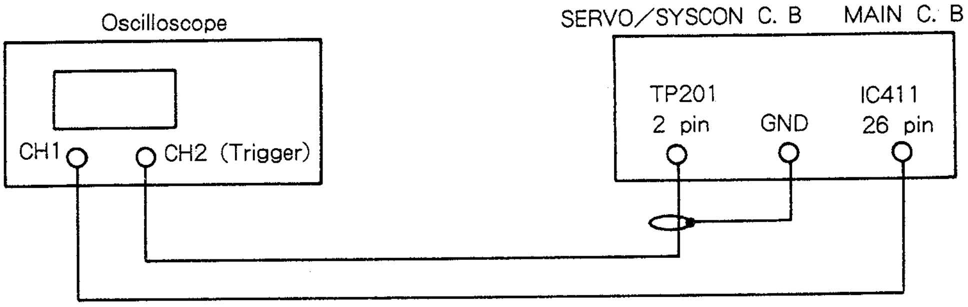
4.X VALUE ADJUSTMENT (PB FM PEAK ADJUSTMENT)

MEASURING METHOD

Measuring Point	Measuring Equip.	ADJ. Condition
MAIN C.B IC411 26 pin SERVO/SYSCON C.B TP201 2 pin	Oscilloscope	PLAY (SP) MODE Test tape TTV-P2

ADJ. Location	ADJ. Value
X value adjustment nut	Maximum level (CH1 PB Y FM signal)

TEST EQUIPMENT CONNECTING DIAGRAMS



Oscilloscope
CH1
CH2 (Trigger)
SERVO/SYSCON C. B
MAIN C. B
TP201
2 pin
GND
IC411
26 pin

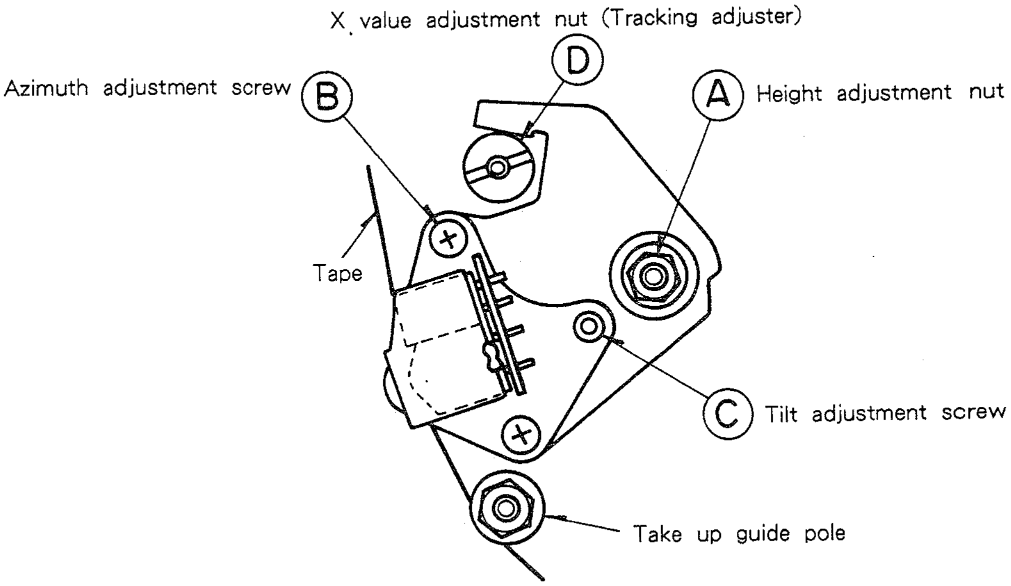
Fig. – 8

1. Connect the equipment as shown in Figure – 8.

2. Adjust RV901 (Tracking volume) to its center position. (clockwise)

3. Adjust the "X value adjustment nut" Ⓓ for maximum PB FM Signal for CH1 by using TTV – P2 test tape. (See Figure – 9)

4. After adjusting the "X value", check that the output level of the PB FM Signal for CH1 changes symmetrically by rotating RV901 (Tracking volume).



X value adjustment nut (Tracking adjuster)
D
Azimuth adjustment screw
B
A
Height adjustment nut
Tape
C
Tilt adjustment screw
Take up guide pole

Fig. – 9

5.ENVELOPE WAVE FORM ADJUSTMENT

MEASURING METHOD

Measuring Point	Measuring Equip.	ADJ. Condition
MAIN C.B IC411 26 pin SERVO/SYSCON C.B TP201 2 pin	Oscilloscope	PLAY (SP) MODE Test tape TTV-P2

ADJ. Location	ADJ. Value
Guide rollers	Maximum level and correct wave form (PB Y FM Signal)

TEST EQUIPMENT. CONNECTING DIAGRAMS

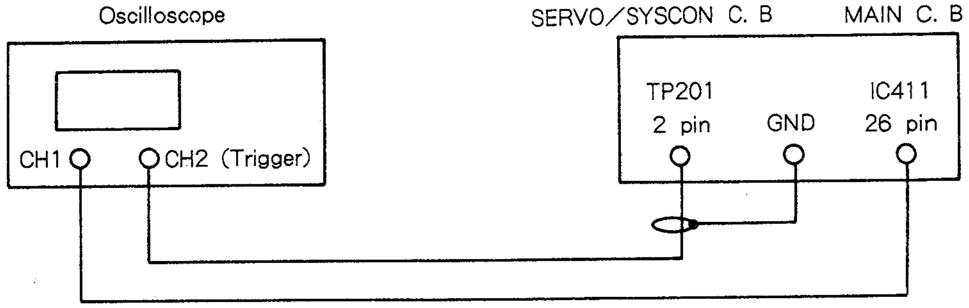


Fig. - 10

1. Connect equipment as shown in Figure - 10.

2. Playback the test tape TTV - P2.

3. The envelope wave form can be performed by adjusting the height of both the supply side and take - up side "Guide rollers". Finaly adjust the height of "Guide rollers" so that the envelope wave form is as flat as possible.

4. Set RV901 (Tracking Volume) to its center position and confirm that a nearly maximum level is obtained. Then rotate the RV901 (Tracking Volume) in both directions while adjusting the height of "Guide rollers", in order to obtain the envelope wave form which is as flat as possible. If the tape is above or lower the helical tape position, the envelope wave forms will take the shape as shown in Figure - 11 and Figure - 12.

5. Adjust for maximum flatness of the envelope wave form according to the Figure - 11 and Figure - 12.

6. After adjustment, rotate RV901 (Tracking Volume) counterclockwise and clockwise, and check that the wave form changes symmetrically.

7. Check the tape curl. (Refer to Section 2)

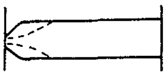
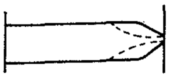
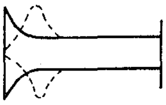
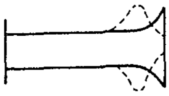
	Tape is too high	
	Supply side	Take-up side
When the tracking volume is rotated counterclockwise and clockwise directions.		
		
Adjustment	Supply side "Guide roller" rotated clockwise direction (lowers "Guide roller") to flatten envelope.	Take-up side "Guide roller" rotated clockwise direction (lowers "Guide roller") to flatten envelope.

Fig.-11

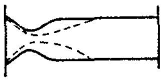
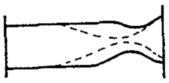
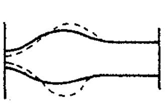
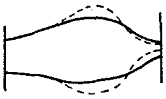
	Tape is too low	
	Supply side	Take-up side
When the tracking volume is rotated counterclockwise and clockwise directions.		
		
Adjustment	Supply side "Guide roller" rotated counterclockwise direction (raises "Guide roller") to flatten envelope.	Take-up side "Guide roller"rotated counterclockwise direction (raises "Guide roller") to flatten envelope.

Fig.-12

6.AUDIO CONTROL HEAD HEIGHT/AUDIO CONTROL HEAD TILT ADJUSTMENT

MEASURING METHOD

Measuring Point	Measuring Equip.	ADJ. Condition
AUDIO OUTPUT	Oscilloscope AC voltmeter	PLAY (SP) MODE Test tape TTV-P1

ADJ. Location	ADJ. Value
Height adjustment nut Azimuth adjustment screw	Maximum level (AC voltmeter)
Tilt adjustment screw	

TEST EQUIPMENT CONNECTING DIAGRAMS

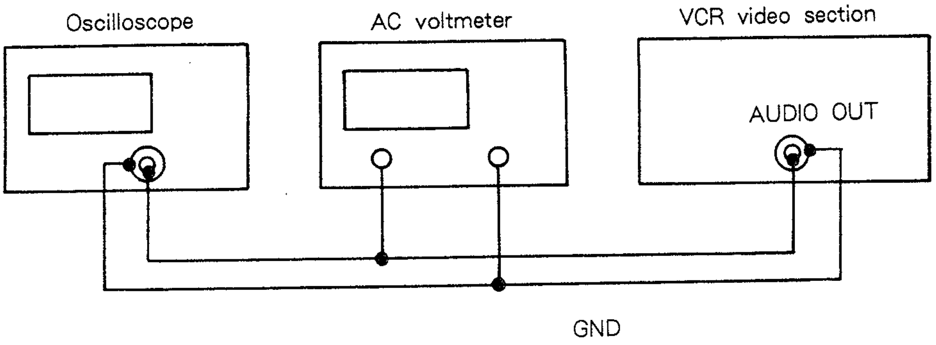


Fig. - 13

1. Connect equipment as shown in Figure - 13.

2. Confirm that the running between the "Take - up guide roller" and the "ACE head" has no slack. If the tape has slack, take it up by turning the "Tilt adjustment screwⒸ". (See Figure - 15)
   Then readjust "Guide roller" height in section 2 and the "X value" in section 4.

3. After confirming on the oscilloscope that a 1kHz audio signal is being output by playing back TTV - P1 test tape, adjust the "Height adjustment nutⒶ" so that the AC voltmeter's reading is brought to its maximum level. (See Figure - 7)

4. Adjust the "Azimuth adjustment screwⒷ" so that the AC voltmeter's reading is brought to its maximum level. (See Figure - 7)

7.AUDIO CONTROL HEAD AZIMUTH ADJUSTMENT

MEASURING METHOD

Measuring Point	Measuring Equip.	ADJ. Condition
AUDIO OUTPUT	Oscilloscope AC voltmeter	PLAY (SP) MODE Test tape TTV－P2

ADJ. Location	ADJ. Value
Azimuth adjustment screw	Maximum level (AC voltmeter)

Fig.-14

TEST EQUIPMENT CONNECTING DIAGRAMS

See Figure－13.

1. After confirming on the oscilloscope that a 6kHz audio signal is being output by playing back TTV－P2 test tape, adjust the "Azimuth adjustment screw Ⓑ" so that the AC voltmeter's reading or oscilloscope wave form is brought to its maximum level. (See Figure－15)

Note : Fix the screw Ⓑ and Ⓒ with lock paint after readjustment.

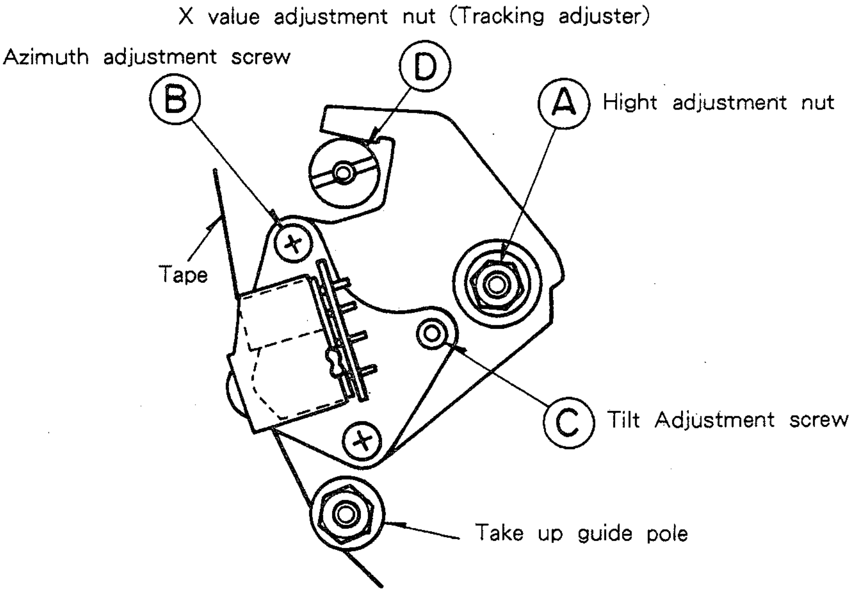
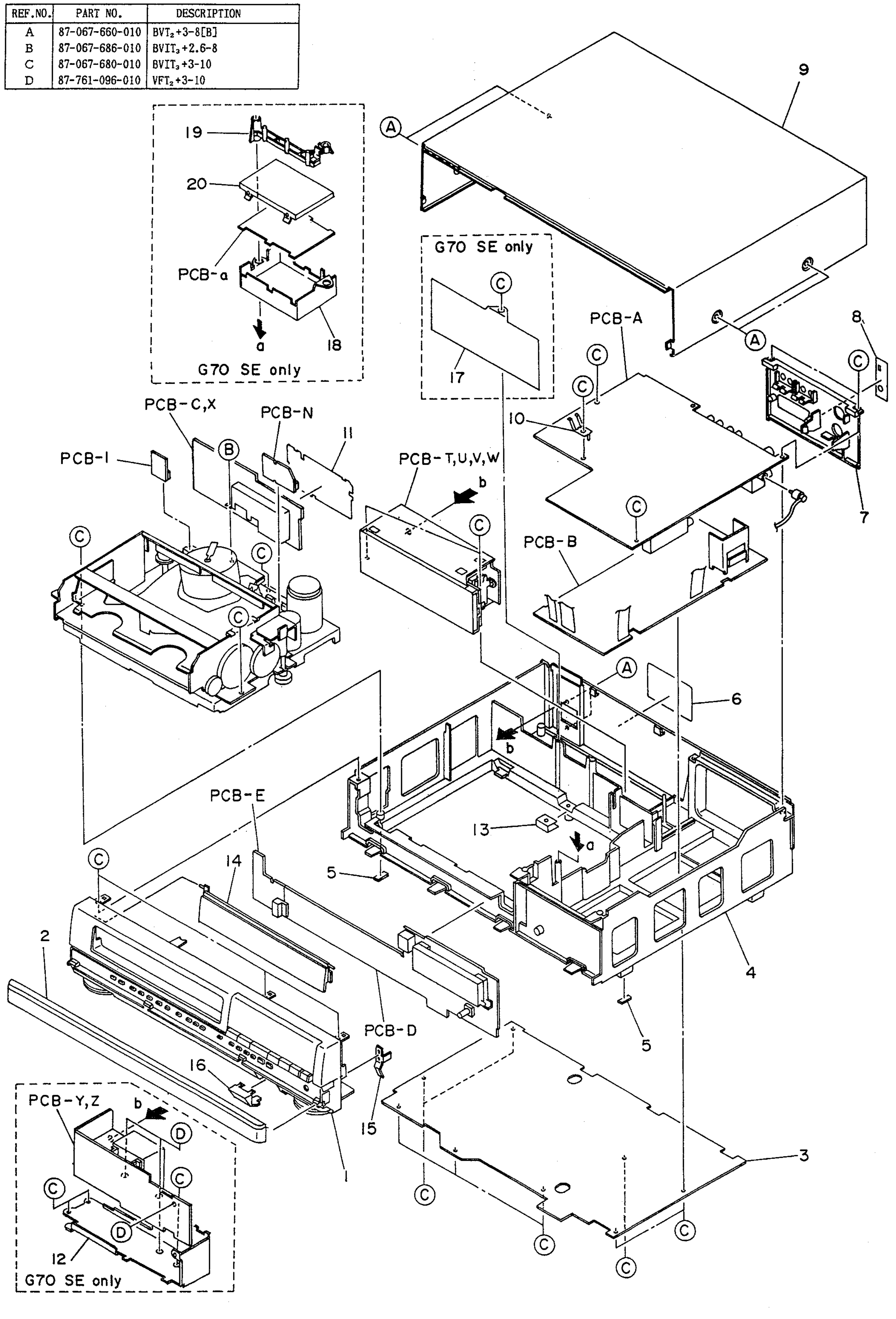

X value adjustment nut (Tracking adjuster)
Azimuth adjustment screw
Ⓑ
Ⓓ
Ⓐ Hight adjustment nut
Tape
Ⓒ Tilt Adjustment screw
Take up guide pole

Fig.－15

EXPLODED VIEW – 1

REF.NO.	PART NO.	DESCRIPTION
A	87-067-660-010	BVT_2+3-8[B]
B	87-067-686-010	$BVIT_3$+2.6-8
C	87-067-680-010	$BVIT_3$+3-10
D	87-761-096-010	VFT_2+3-10

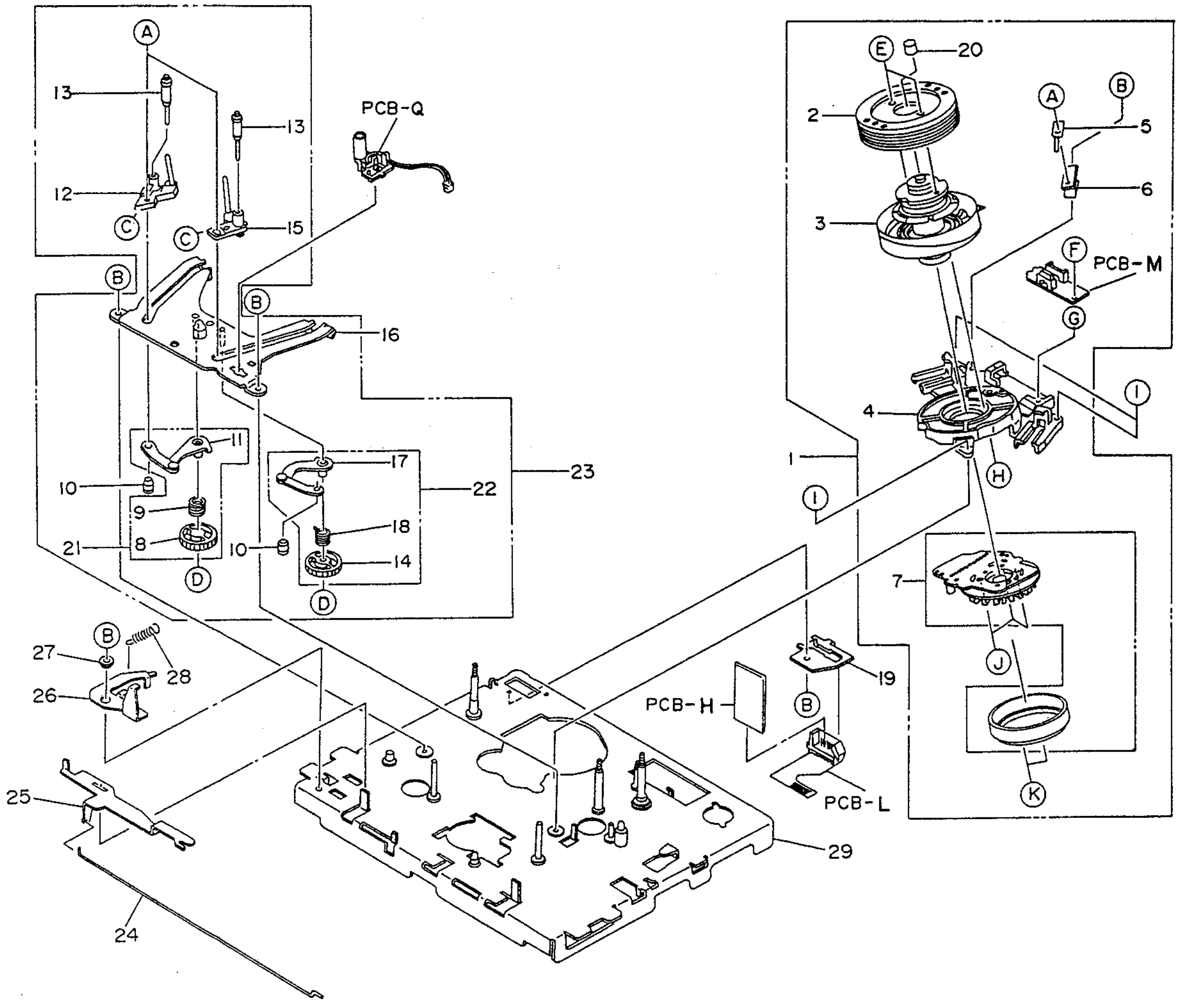

9
Ⓐ
19
20
PCB-a
18
a
G70 SE only
G70 SE only
Ⓒ
17
PCB-A
Ⓒ
Ⓒ
10
Ⓐ
8
Ⓒ
7
PCB-C,X
PCB-N
11
PCB-I
Ⓑ
PCB-T,U,V,W
b
Ⓒ
PCB-B
Ⓒ
Ⓒ
Ⓒ
Ⓐ
6
b
13
a
PCB-E
Ⓒ
14
5
4
2
5
PCB-D
16
15
3
PCB-Y,Z
b
Ⓓ
Ⓒ
Ⓒ
Ⓓ
12
G70 SE only
1
Ⓒ
Ⓒ
Ⓒ
Ⓒ

MECHANICAL PARTS LIST

PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q, TY
	1-1	★09-057-117-010	CABINET FRONT ASSY(SE)	*	1
	1-1	★09-057-094-010	CABINET FRONT ASSY(SH, DH, DK915KE)	*	1
	1-2	★81-JU7-007-010	DOOR, 17(SE, SH, DH)	*	1
	1-2	★81-JU7-006-010	DOOR, 915KE(DK915KE)	*	1
	1-3	★80-JU4-023-010	BOTTOM 2		1
	1-4	---	CABINET, MAIN 2		1
	1-5	★89-JU5-018-110	FELT, FOOT		2
	1-6	★81-JU7-015-010	PLATE, SPEC(SE)	*	1
	1-6	★81-JU7-013-010	PLATE, SPEC(SH)	*	1
	1-6	★81-JU7-014-010	PLATE, SPEC(DH)	*	1
	1-6	★81-JU7-012-010	PLATE, SPEC(DK915KE)	*	1
	1-7	★89-JU5-011-310	PANEL, JACK		1
	1-8	★89-JU5-024-010	PLATE, JACK(SE, SH)		1
	1-8	★89-JU5-040-010	PLATE, JACK(DH)		1
	1-8	★89-JU6-007-110	PLATE, JACK(DK915KE)		1
	1-9	★89-JU5-009-110	CABINET, STEEL		1
	1-10	---	PLATE, EARTH		1
	1-11	---	SHIELD, PR2		1
	1-12	81-JU6-206-010	HOLDER, PS(SE)		1
	1-13	★89-JU5-217-010	CLAMP, EARTH		1
	1-14	★81-JU7-002-010	DOOR, CASSETTE	*	1
	1-15	★81-JU6-202-010	HOLDER, DOOR		1
	1-16	★81-JU6-009-010	COVER, JACK 6		1
	1-17	---	SHIELD, S1(SE)		1
	1-18	---	SHIELD, AU1(SE)		1
	1-19	★81-JU6-219-110	HOLDER, AU(SE)		1
	1-20	---	SHIELD, AU2(SE)		1

EXPLODED VIEW – 2

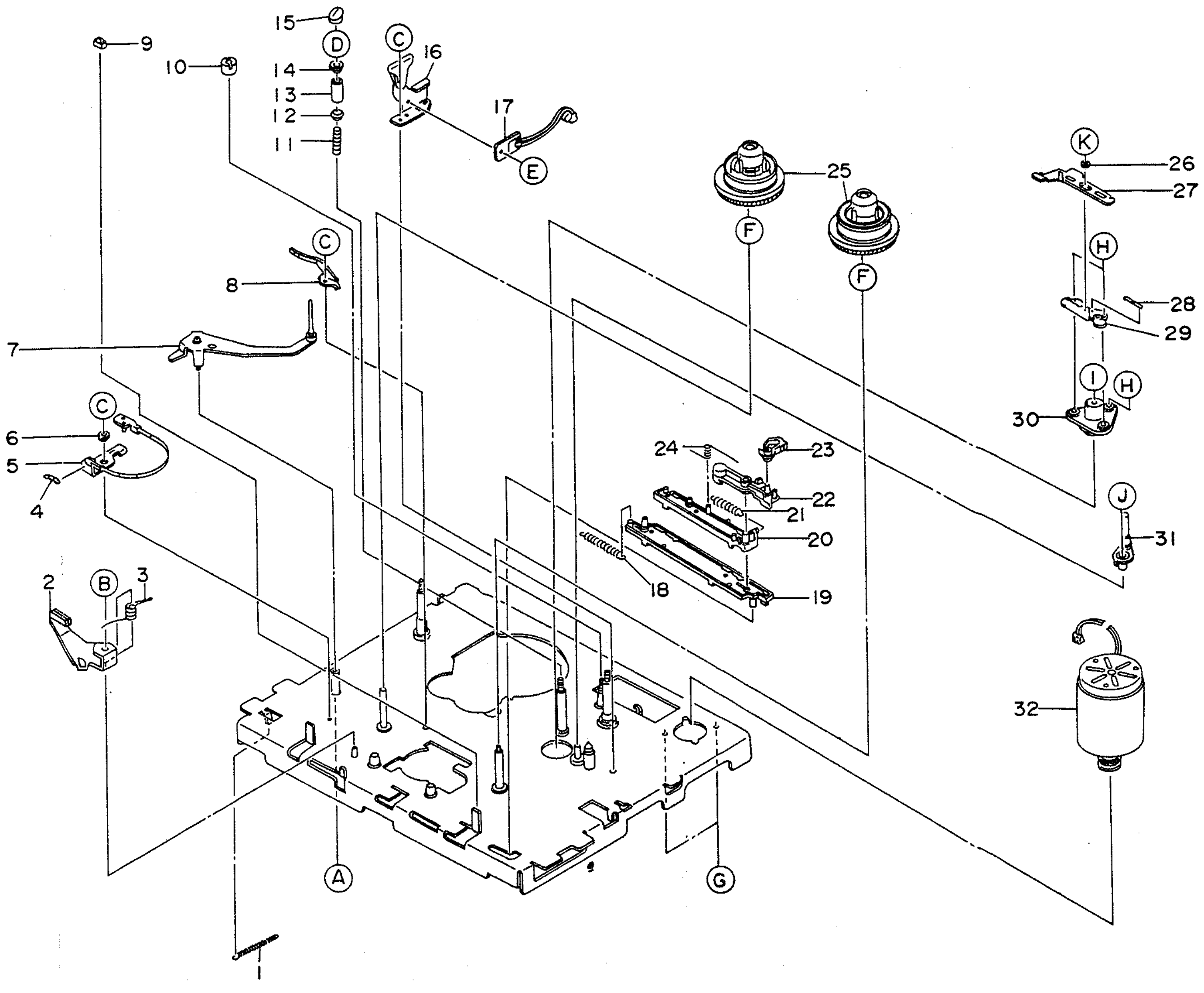
REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
A	S9-665-000-000	CUP SCREW 2.6×3	E	S9-972-000-000	BIND TAMS SCREW 3×8	I	S9-205-000-000	C TAPPING SCREW 3×10
B	S9-192-000-000	C TAPPING SCREW 2.6×5	F	S9-973-000-000	W TAMS SCREW 2.6×6	J	S9-055-000-000	SCREW 2.6×2.0
C	S9-550-000-000	SET SCREW 2.0×3(PLANE)	G	S9-715-000-000	WASHER 2.6	K	S9-999-200-350	TAMS SCREW 2.6×6
D	S9-884-000-000	PW CUT 2.6×6×0.5	H	S9-999-180-180	SCREW(FOR CAMERA) 2×5			



PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q, TY
	2-1	★S8-059-725-0A0	CYLINDER ASSY		1
	2-2	S8-059-010-190	UPPER DRUM		1
	2-3	★S8-059-013-040	LOWER DRUM ASSY		1
	2-4	★S8-059-010-010	CYLINDER MOUNT		1
	2-5	★S8-059-010-540	DRUM EARTH		1
	2-6	★S8-059-010-020	DRUM EARTH BRACKET		1
	2-7	S6-004-030-240	MOTOR TM82		1
	2-8	★S8-059-030-060	T LOADING GEAR L		1
	2-9	★S8-059-030-080	LOADING GEAR SPRING L		1
	2-10	★S8-059-030-140	LOADING BOSS		2
	2-11	★S8-059-035-020	LOADING PLATE L SEMI ASSY		1
	2-12	★S8-059-030-040	LOADING BLOCK L		1
	2-13	★S8-000-030-370	ROLLER POST ST		2
	2-14	★S8-059-030-070	T LOADING GEAR R		1
	2-15	★S8-059-030-050	LOADING BLOCK R		1
	2-16	★S8-059-035-010	LOADING BASE SEMI ASSY		1
	2-17	★S8-059-035-030	LOADING PLATE R SEMI ASSY		1
	2-18	★S8-059-030-090	LOADING GEAR SPRING R		1
	2-19	---	CONNECTOR BRACKET		1
	2-20	★S8-059-010-260	DRUM EARTH		1
	2-21	★S8-059-033-020	LOADING GEAR L ASSY		1
	2-22	★S8-059-033-030	LOADING GEAR R ASSY		1
	2-23	---	LOADING BASE ASSY		1
	2-24	★S8-059-130-110	REC ACTUATE SPOKE		1
	2-25	★S8-059-130-070	REC ACTUATOR		1
	2-26	★S8-059-130-060	REC LEVER		1
	2-27	★S8-059-060-180	COLLAR		1
	2-28	★S8-059-130-140	REC LEVER SPRING		1
	2-29	★ ---	CHASSIS		1

EXPLODED VIEW – 3

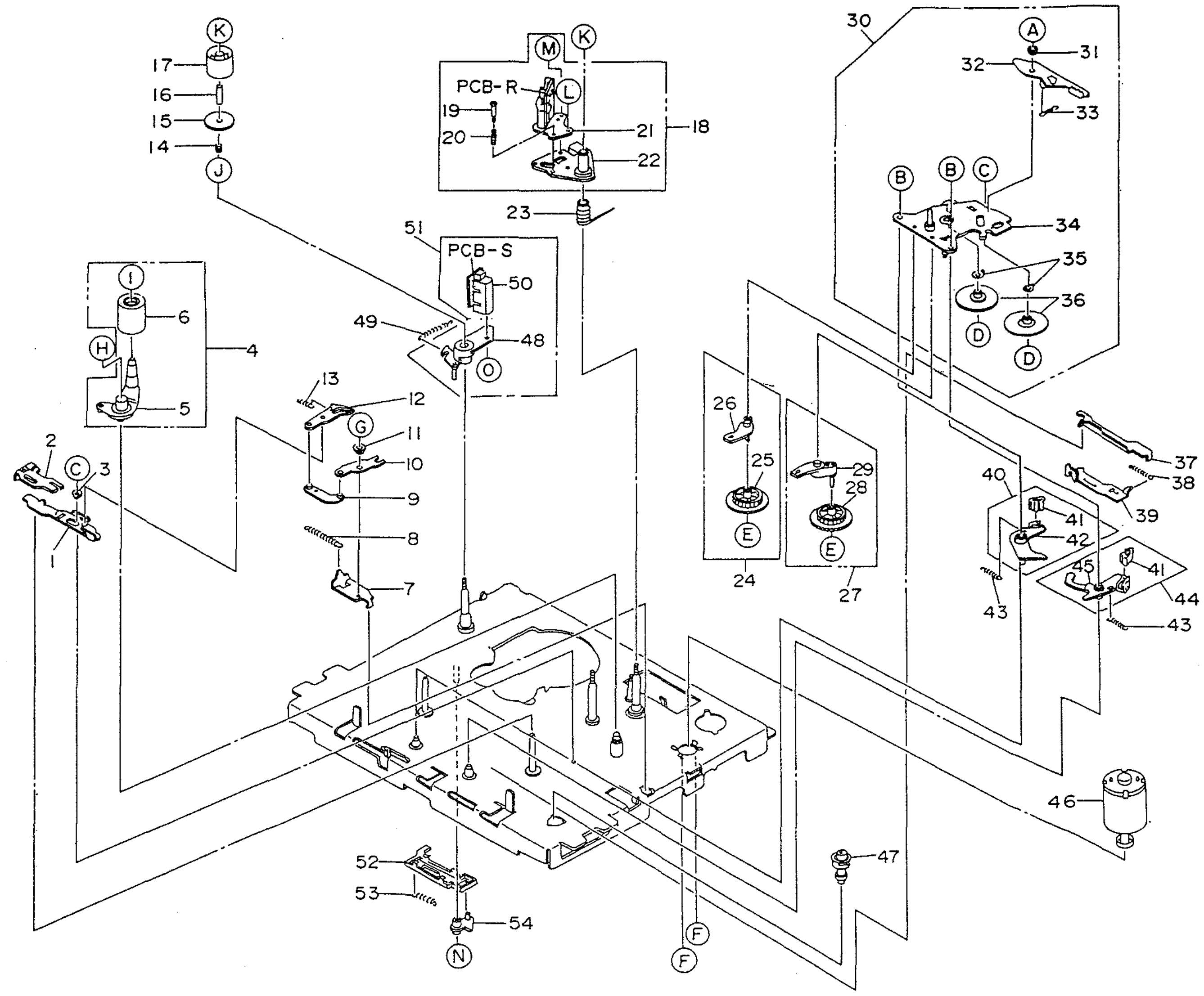
REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
A	S9-999-030-150	PW CUT 2.1×4×0.5	E	S9-096-000-000	TAMS SCREW 2.6×4	I	S9-999-060-030	NYLON WASHER 2.92×5×0.5
B	S9-876-000-000	PW CUT 2.1×5×0.5	F	S9-912-000-000	PW 3.1×6×0.5	J	S9-884-000-000	PW CUT 2.6×6×0.5
C	S9-191-000-000	C TAPPING SCREW 2.6×4	G	S9-105-000-000	TAMS SCREW 3×4	K	S9-077-000-000	TAMS SCREW 2×4
D	S9-453-000-000	NUT 3.0	H	S9-195-000-000	C TAPPING SCREW 2.6×8			



PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q, TY
	3-1	★S8-059-080-200	BT ACTUATE PLATE SPRING		1
	3-2	★S8-059-103-040	S SOFT BRAKE ASSY		1
	3-3	★S8-059-100-220	S SOFT BRAKE SPRING		1
	3-4	★S8-059-080-170	BAND HOLDER SPRING		1
	3-5	★S8-059-083-020	BT BAND ASSY		1
	3-6	★S8-059-080-150	BAND HOLDER COLLAR		1
	3-7	★S8-059-085-010	BT ARM SEMI ASSY		1
	3-8	★S8-059-080-090	BACK TENSION SUPPORT		1
	3-9	★S8-059-020-230	DAMPER RUBBER		1
	3-10	★S8-059-020-290	TRACKING ADJUSTER		1
	3-11	★S8-059-020-260	TAPE GUIDE SPRING		1
	3-12	★S8-000-030-290	TAPE GUIDE FLANGE D		1
	3-13	★S8-000-030-140	TAPE GUIDE		1
	3-14	★S8-000-030-280	TAPE GUIDE FLANGE C		1
	3-15	★S8-000-030-190	GUIDE CAP		1
	3-16	★S8-059-023-010	OPEN ANGLE ASSY		1
	3-17	★S6-808-080-040	DEW SENSOR EYH-S10R		1
	3-18	★S8-059-100-100	BRAKE ACTUATE BASE SPRING		1
	3-19	★S8-059-100-090	BRAKE ACTUATE BASE		1
	3-20	★S8-059-100-110	BRAKE PLATE		1
	3-21	★S8-059-100-120	BRAKE PLATE SPRING		1
	3-22	★S8-059-100-130	TRIGGER LEVER		1
	3-23	★S8-059-100-140	TRIGGER HOOK		1
	3-24	★S8-059-100-230	TRIGGER LEVER SPRING		1
	3-25	S8-059-053-010	REEL ASSY		2
	3-26	★S8-059-170-100	RG SLIDE PLATE COLLAR		1
	3-27	★S8-059-170-030	RG SLIDE PLATE		1
	3-28	★S8-059-170-110	RG SLIDE SPRING		1
	3-29	★S8-059-170-090	RG SLIDE BASE		1
	3-30	★S8-059-073-010	METAL HOUSING ASSY		1
	3-31	★S8-059-175-020	RG ARM SEMI ASSY		1
	3-32	S8-059-073-020	CAPSTAN MOTOR ASSY		1

EXPLODED VIEW – 4

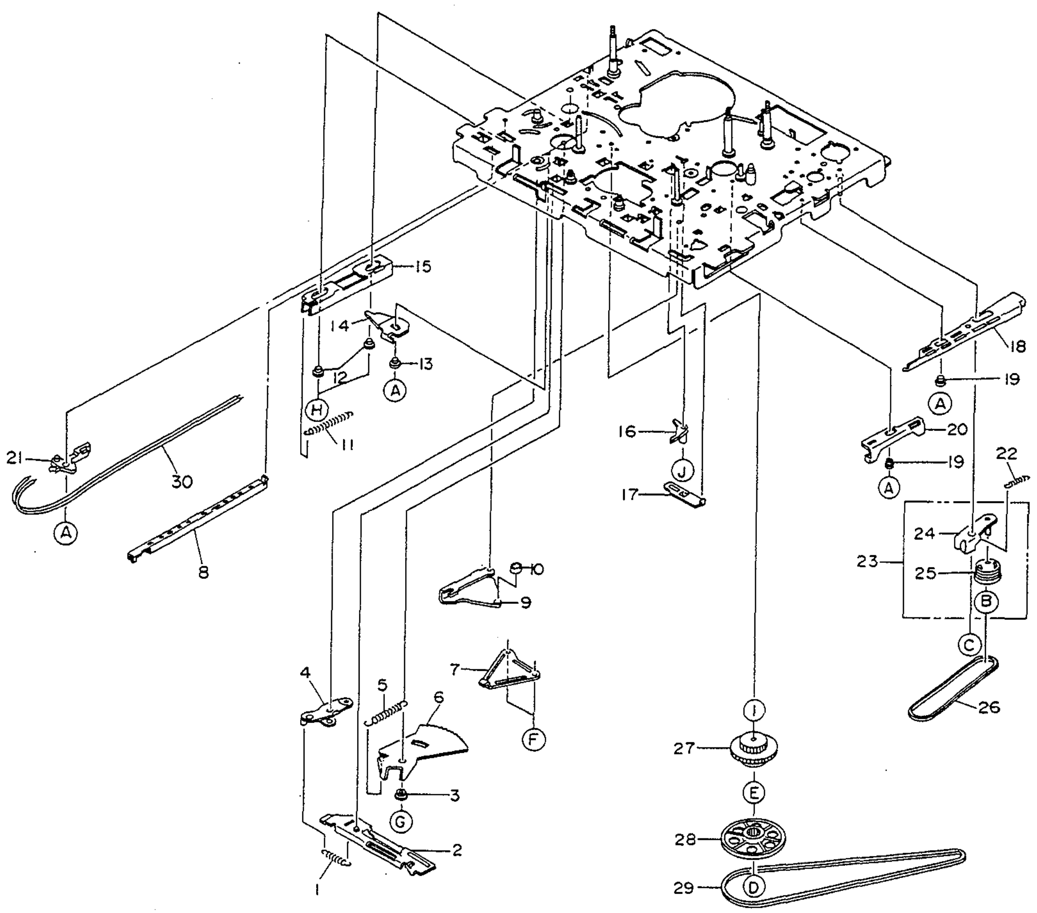
REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
A	S9-974-000-000	SL FH SCREW 2×3	G	S9-096-000-000	TAMS SCREW 2.6×4	M	S9-705-000-000	LONG LOCK SCREW 2.6×7
B	S9-077-000-000	TAMS SCREW 2×4	H	S9-999-030-110	PW CUT 5×8×0.5	N	S9-876-000-000	PW 2.1×5×0.5 CUT
C	S9-192-000-000	C TAPPING SCREW 2.6×5	I	S9-038-000-000	SCREW 2.6×4	O	S9-114-000-000	SCREW FLANGE 2×3
D	S9-500-000-000	E RING S1.5	J	S9-337-000-000	PLANE WASHER 3×8×0.5			
E	S9-743-000-000	PW CUT 1.6×3.8×0.3	K	S9-953-000-000	NYLON NUT M3			
F	S9-105-000-000	C TAPPING SCREW 3×4	L	S9-999-200-250	SCREW 3×6 (SHAPE TYPE)			


K
17
16
15
14
J
M
K
PCB-R
L
19
20
21
18
22
23
51
PCB-S
50
49
48
O
I
6
H
4
5
13
12
G
11
10
9
8
7
2
C
3
1
30
A
31
32
33
B
B
C
34
35
36
D
D
26
25
E
24
29
28
E
27
37
38
39
40
41
42
45
41
44
43
43
46
47
52
53
54
N
F
F

PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q, TY
	4-1	★S8-059-060-240	P SLIDE PLATE A		1
	4-2	★S8-059-060-250	P SLIDE PLATE B		1
	4-3	★S8-059-060-180	COLLAR		1
	4-4	★S8-059-063-010	PINCH ROLLER ARM ASSY		1
	4-5	★S8-059-065-010	PINCH ROLLER ARM SEMI ASSY		1
	4-6	★S8-000-090-220	PINCH ROLLER A		1
	4-7	★S8-059-060-190	P ANGLE HOLDER		1
	4-8	★S8-059-060-200	P-SPRING, ROLLER		1
	4-9	★S8-059-060-060	JOINT PLATE		1
	4-10	★S8-059-060-050	P ACTUATE ANGLE		1
	4-11	★S8-059-060-180	COLLAR		1
	4-12	★S8-059-060-040	P ACTUATE ARM		1
	4-13	★S8-059-060-090	P-SPRING, ACTUATE ARM		1
	4-14	★S8-059-040-090	TAPE GUIDE FLANGE SPRING		1
	4-15	★S8-059-040-070	TAPE GUIDE FLANGE A		1
	4-16	★S8-059-040-060	IMPEDANCE ROLLER SLEEVE		1
	4-17	★S8-059-040-050	IMPEDANCE ROLLER		1
	4-18	★S8-059-043-080	HEAD BASE ASSY		1
	4-19	★S8-000-060-260	AZIMUTH SPRING SCREW		1
	4-20	★S8-000-060-040	AZIMUTH SPRING		1
	4-21	★S6-204-150-060	ACE HEAD HV225211		1
	4-22	---	HEAD BASE SEMI ASSY		1
	4-23	★S8-059-040-150	HEAD SPRING		1
	4-24	★S8-059-093-140	P GEAR ASSY		1
	4-25	---	PLAY GEAR		1
	4-26	---	P GEAR ARM ASSY		1
	4-27	★S8-059-093-150	RF GEAR ASSY		1
	4-28	---	FF GEAR		1
	4-29	★S8-059-093-040	RF GEAR ARM ASSY		1
	4-30	---	SUB PLATE ASSY		1
	4-31	★S8-059-100-070	T SOFT BRAKE ARM COLLAR		1
	4-32	★S8-059-103-030	T SOFT BRAKE ASSY		1
	4-33	★S8-059-100-060	T-SPRING, SOFT BRAKE ARM		1
	4-34	★S8-059-095-010	SUB PLATE SEMI ASSY		1
	4-35	★S8-000-100-250	WAVE WASHER		2
	4-36	★S8-059-090-6A0	REEL DRIVE GEAR		2
	4-37	★S8-059-100-160	BRAKE LIFTER		1
	4-38	★S8-059-100-180	L BRAKE ACTUATOR SPRING		1
	4-39	★S8-059-100-170	L BRAKE ACTUATOR		1
	4-40	★S8-059-103-010	S BRAKE ARM ASSY		1
	4-41	★S8-059-100-190	BRAKE SHOE		2
	4-42	★S8-059-100-010	S BRAKE ARM		1
	4-43	★S8-059-100-020	BRAKE ARM SPRING		2
	4-44	★S8-059-103-020	T BRAKE ARM ASSY		1
	4-45	★S8-059-100-030	T BRAKE ARM		1
	4-46	S8-059-113-010	LM ASSY		1
	4-47	★S8-059-113-020	TRIGGER BEARING ASSY		1
	4-48	★S8-059-040-040	FE PLATE		1
	4-49	★S8-059-040-080	FE PLATE SPRING		1
	4-50	★S6-204-150-030	FE HEAD HVFMD 0006		1
	4-51	★S8-059-043-020	FE PLATE ASSY		1
	4-52	★S8-059-040-100	FE SLIDE PLATE		1
	4-53	★S8-059-040-120	FE ACTUATE SPRING		1
	4-54	★S8-059-040-110	FE ACTUATE LEVER		1

EXPLODED VIEW – 5

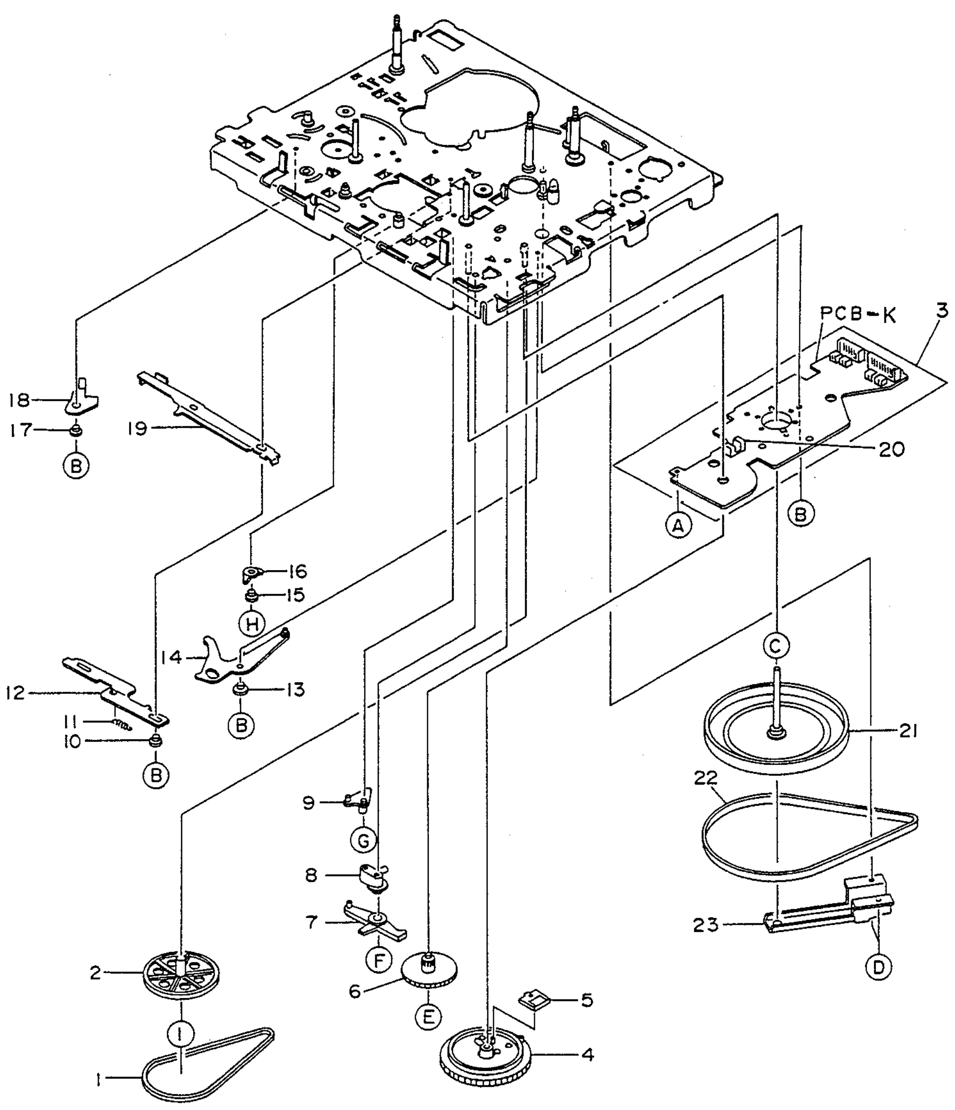
REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
A	S9-192-000-000	C TAPPING SCREW 2.6×5	E	S9-999-060-040	NYLON WASHER 2.98×6×0.3	I	S9-853-000-000	NYLON WASHEER 3.1×6×0.3
B	S9-743-000-000	PW CUT 1.6×3.8×0.5	F	S9-078-000-000	TAMS SCREW 2×5	J	S9-876-000-000	PW CUT 2.1×5×0.5
C	S9-876-000-000	PW CUT 2.1×6×0.5	G	S9-203-000-000	C TAPPING SCREW 3×6			
D	S9-884-000-000	PW CUT 2.6×6×0.5	H	S9-840-000-000	S TAPPING SCREW 2.6×3.5			



PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q,TY
	5-1	★S8-059-120-050	LOADING ACTUATOR SPRING		1
	5-2	★S8-059-125-030	LOADING ACTUATOR SEMI ASSY		1
	5-3	★S8-059-120-100	L GEAR PLATE COLLAR		1
	5-4	★S8-059-125-020	LOADING ACTUATE LEVER SEMI ASSY		1
	5-5	★S8-059-120-120	L GEAR PLATE SPRING		1
	5-6	★S8-059-120-090	L GEAR PLATE		1
	5-7	★S8-059-120-110	LOADING LEVER REINFORCE PLATE		1
	5-8	---	WIRE HOLDER		1
	5-9	★S8-059-125-010	LOADING LEVER SEMI ASSY		1
	5-10	★S8-059-120-130	CAM ROLLER		1
	5-11	★S8-059-080-130	BACK TENSION SPRING		1
	5-12	★S8-059-080-210	BT ACTUATE PLATE COLLAR		2
	5-13	★S8-059-060-180	COLLAR		1
	5-14	★S8-059-080-180	BT ACTUATE LEVER		1
	5-15	★S8-059-080-190	BT ACTUATE PLATE		1
	5-16	★S8-059-170-010	RG ACTUATE ARM		1
	5-17	★S8-059-170-020	RG ACTUATE		1
	5-18	★S8-059-150-070	L BRAKE PLATE		1
	5-19	★S8-059-060-180	COLLAR		2
	5-20	★S8-059-150-080	EJECT ACTUATOR		1
	5-21	S6-401-011-510	LEAF SWITCH MCV-00321		1
	5-22	★S8-059-150-110	IDLER ARM SPRING		1
	5-23	★S8-059-153-030	E IDLER ARM ASSY		1
	5-24	---	E IDLER ARM SEMI ASSY		1
	5-25	---	EJECT PULLEY		1
	5-26	S8-059-150-060	FL BELT		1
	5-27	★S8-059-093-100	CLUTCH ASSY		1
	5-28	★S8-059-093-010	MIDDLE PULLEY ASSY		1
	5-29	S8-059-090-170	DRIVE BELT		1
	5-30	---	WIRE		2

EXPLODED VIEW – 6

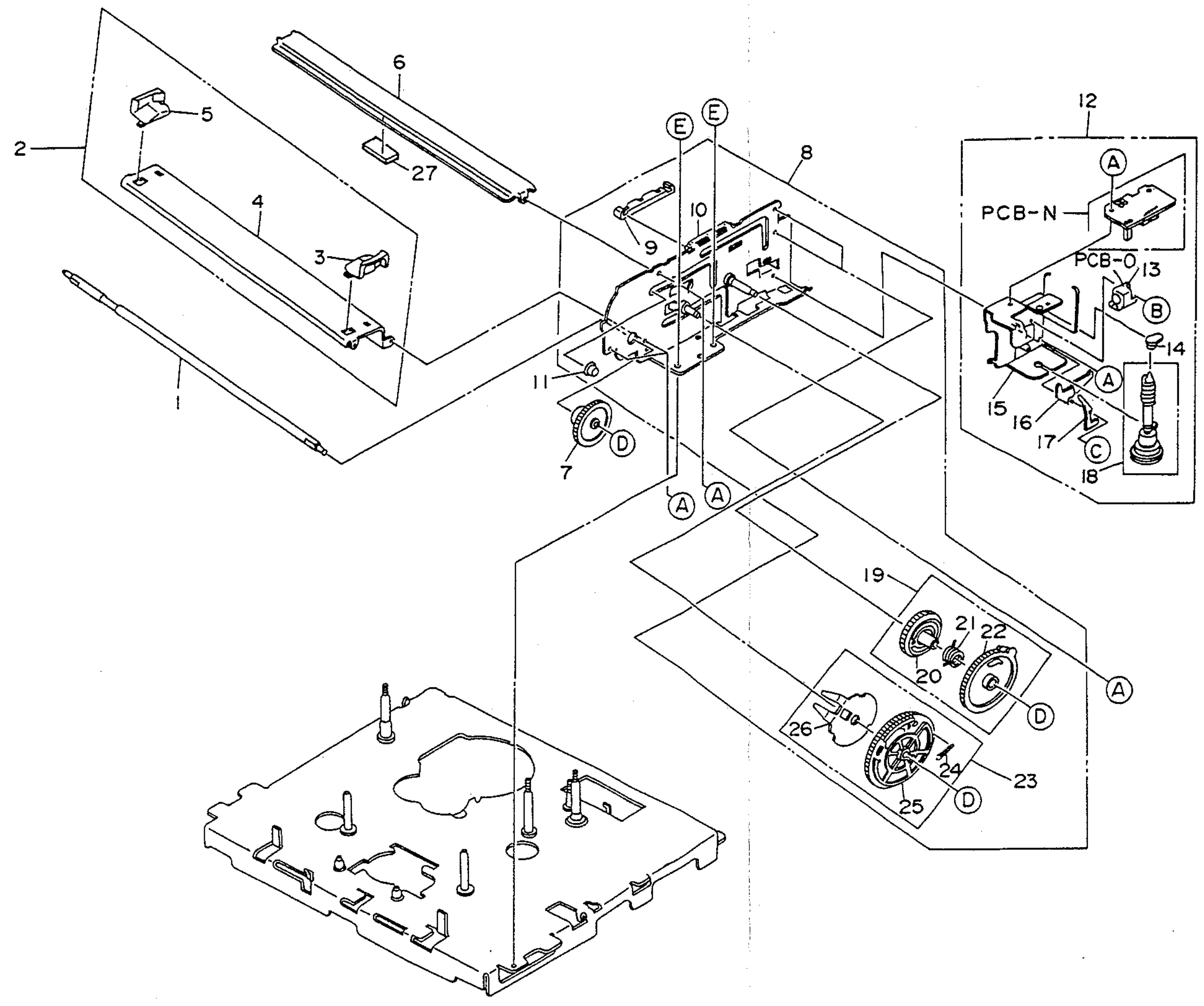
REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
A	S9-691-000-000	S TAPPING SCREW 2.6×5	D	S9-202-000-000	C TAPPING SCREW 3×5	G	S9-884-000-000	PW CUT 2.6×6×0.5
B	S9-192-000-000	C TAPPING SCREW 2.6×5	E	S9-876-000-000	PW CUT 2.1×5×0.5	H	S9-999-180-100	C TAPPING FH SCREW 2.6×4
C	S9-912-000-000	PW 3.1×6×0.5	F	S9-999-030-100	PW CUT 2.6×8×0.5	I	S9-743-000-000	PW CUT 1.6×3.8×0.3



PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q, TY
	6-1	S8-059-110-060	LOADING BELT		1
	6-2	★S8-059-110-030	LOADING PULLEY		1
	6-3	★S8-059-133-020	BASE PLATE ASSY		1
	6-4	★S8-059-110-010	LOADING CAM		1
	6-5	★S8-059-110-020	S BRUSH		1
	6-6	★S8-059-110-040	LOADING GEAR		1
	6-7	★S8-059-110-140	EJECT ARM		1
	6-8	★S8-059-110-130	BRAKE ACTUATE ARM		1
	6-9	★S8-059-110-120	SEARCH ARM B		1
	6-10	★S8-059-060-110	P SLIDER COLLAR		1
	6-11	★S8-059-060-230	P-SPRING, SLIDER		1
	6-12	★S8-059-060-100	P SLIDER		1
	6-13	★S8-059-060-170	P CAM LEVER COLLAR		1
	6-14	★S8-059-065-020	P CAM LEVER SEMI ASSY		1
	6-15	★S8-059-060-130	P CRANK COLLAR		1
	6-16	★S8-059-060-120	P CRANK		1
	6-17	★S8-059-060-180	COLLAR		1
	6-18	★S8-059-080-230	BT RETURN LEVER		1
	6-19	★S8-059-080-100	BT CHANGE PLATE		1
	6-20	S6-808-080-030	REEL SENSOR		1
	6-21	★S8-059-070-140	FLYWHEEL CAPSTAN		1
	6-22	S8-059-070-100	MAIN BELT		1
	6-23	---	FL ANGLE ASSY		1

EXPLODED VIEW – 7

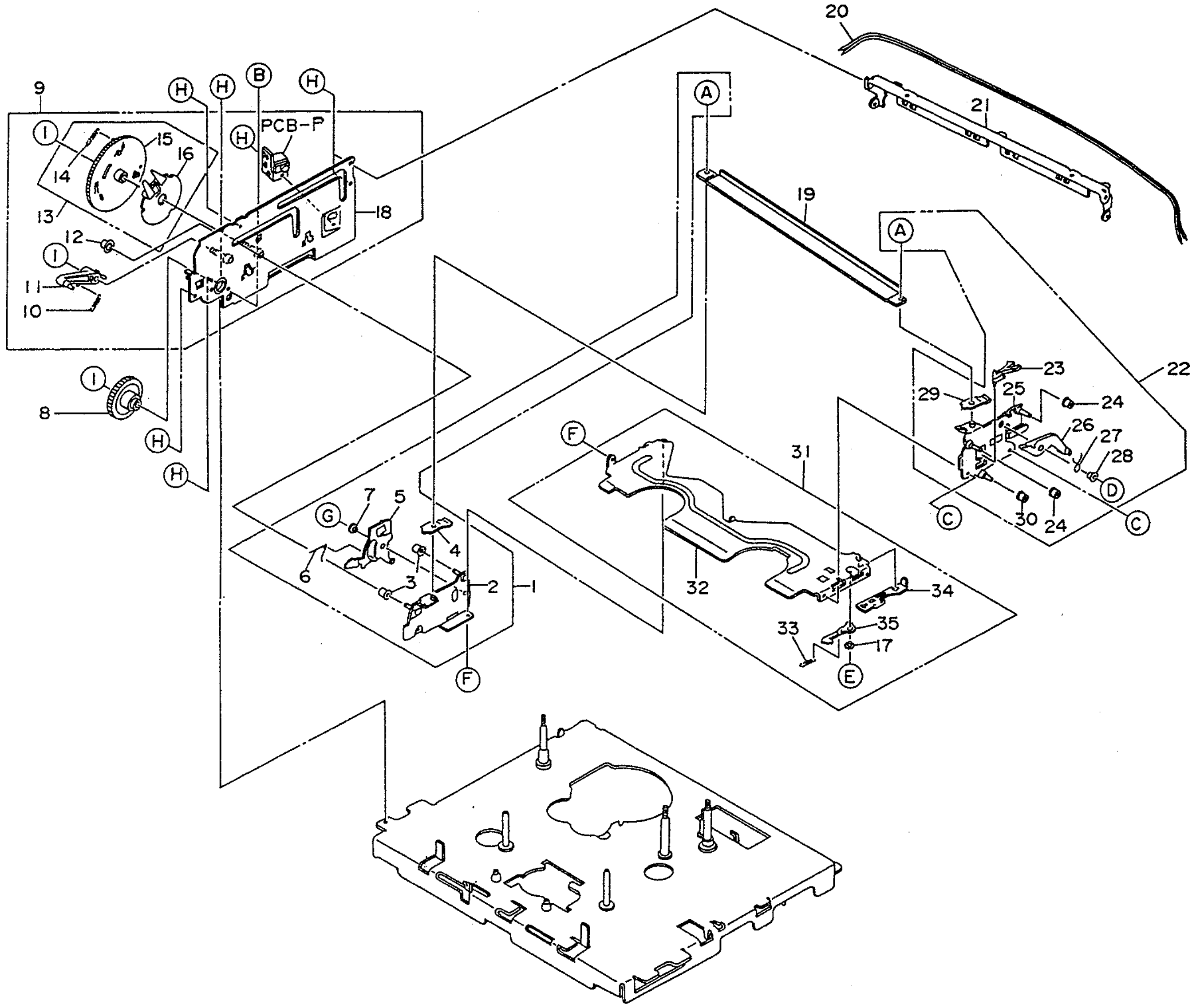
REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
A	S9-096-000-000	TAMS SCREW 2.6×4	D	S9-504-000-000	E RING S2.5
B	S9-078-000-000	TAMS SCREW 2×5	E	S9-192-000-000	C TAPPING SCREW 2.6×4
C	S9-743-000-000	PW CUT 1.6×3.8×0.3			



PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q, TY
	7-1～8-35	★S8-059-163-370	FRONT LOADING ASSY		1
	7-1	★S8-059-160-600	SYNCHRONIZE SHAFT		1
	7-2	---	FRONT ANGLE ASSY		1
	7-3	★S8-059-160-250	TAPE GUIDE R		1
	7-4	★S8-059-160-180	FRONT ANGLE		1
	7-5	★S8-059-160-240	TAPE GUIDE L		1
	7-6	★S8-059-160-660	UPPER PLATE		1
	7-7	★S8-059-160-170	SYNCHRONIZE GEAR A		1
	7-8	★S8-059-163-390	FRAME R ASSY		1
	7-9	---	OPEN LEVER GUIDE		1
	7-10	---	FRAME R SEMI ASSY		1
	7-11	---	GUIDE SLEEVE		1
	7-12	★S8-059-163-180	C LOAD BRACKET ASSY		1
	7-13	★S8-059-163-160	SENSOR P.C.B RM ASSY		1
	7-14	---	F WORM BEARING A		1
	7-15	---	C ROAD BRACKET SEMI ASSY		1
	7-16	---	IN SW LEVER		1
	7-17	---	S SW LEVER		1
	7-18	★S8-059-163-190	F LOADING CLUTCH ASSY		1
	7-19	★S8-059-163-210	WORM WHEEL ASSY		1
	7-20	---	FRICTION GEAR		1
	7-21	---	FRICTION SPRING		1
	7-22	---	WORM WHEEL		1
	7-23	★S8-059-163-120	LIFT GEAR R ASSY		1
	7-24	---	LP SPRING		1
	7-25	---	LIFT GEAR R		1
	7-26	---	LIFT ARM		1
	7-27	★S8-059-160-720	DAMPER MAT		1

EXPLODED VIEW – 8

REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
A	S9-833-000-000	SCREW 2.3×2	D	S9-967-000-000	SL SCREW 2×4	G	S9-966-000-000	SL SCREW 2×2.5
B	S9-192-000-000	C TAPPING SCREW 2.6×4	E	S9-968-000-000	SL SCREW 2.6×3	H	S9-096-000-000	TAMS SCREW 2.6×4
C	S9-556-000-000	SCREW 2.6×3	F	S9-991-000-000	SCREW 2.3×2.5	I	S9-504-000-000	E RING S2.5



PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q, TY
	7-1～8-35	★S8-059-163-370	FRONT LOADING ASSY		1
	8-1	★S8-059-163-090	SIDE PLATE L ASSY		1
	8-2	---	SIDE PLATE L SEMI ASSY		1
	8-3	---	GUIDE ROLLER		2
	8-4	★S8-059-160-280	CASSETTE PUSH PLATE		1
	8-5	---	C LCOK PLATE L		1
	8-6	---	LOCK PLATE SPRING L		1
	8-7	---	LOCK PLATE COLLAR		1
	8-8	★S8-059-160-170	SYNCHRONIZE GEAR A		1
	8-9	★S8-059-163-380	FRAME L ASSY		1
	8-10	★S8-059-160-680	LIFT LEVER SPRING		1
	8-11	★S8-059-160-670	LIFT LEVER		1
	8-12	★S8-000-220-240	GUIDE SLEEVE		1
	8-13	★S8-059-163-140	LIFT GEAR L ASSY		1
	8-14	---	LP SPRING		1
	8-15	---	LIFT GEAR L		1
	8-16	---	LIFT ARM		1
	8-17	---	COLLAR		1
	8-18	---	FRAME L SEMI ASSY		1
	8-19	★S8-000-220-650	TOP STAY		1
	8-20	---	END SENSOR WIRE		1
	8-21	★S8-059-160-090	REAR ANGLE		1
	8-22	★S8-059-163-080	SIDE PLATE R ASSY		1
	8-23	---	LOCK RELEASE LEVER		1
	8-24	---	GUIDE ROLLER		2
	8-25	---	SIDE PLATE R SEMI ASSY		1
	8-26	---	OPEN LEVER		1
	8-27	---	OPEN LEVER SPRING		1
	8-28	---	OPEN LEVER COLLAR		1
	8-29	★S8-059-160-280	CASSETTE PUSH PLATE		1
	8-30	---	GUIDE ROLLER		1
	8-31	★S8-059-163-060	CASSETTE HOLDER ASSY		1
	8-32	---	CASSETTE HOLDER		1
	8-33	---	LOCK SPRING		1
	8-34	---	SLIDE PLATE		1
	8-35	---	C LOCK PLATE A		1

■ ACCESSORIES／PACKAGE LIST

PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q.TY
	1	★81-JU7-901-010	INSTRUCTION BOOKLET SH (G70SH,DH)	※	1
	2	★81-JU7-903-010	INSTRUCTION BOOKLET KE (DK915KE)	※	1
	3	★81-JU7-902-010	INSTRUCTION BOOKLET SE (G70SE)	※	1
	4	★87-034-594-010	AC CORD SET E		1
	5	★87-034-593-010	CORD,RF PAL		1
	6	★89-JU5-639-010	REMOTE UNIT RC－TG51P		1